

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 11-15-06
 Art Unit: 1752 Phone Number 302-1333 Serial Number: 10/811,558
 Mail Box and Bldg/Room Location: 9C15 Results Format Preferred (circle) PAPER DISK E-MAIL
 (Rem.)

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: P12. See B.6.

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

SCIENTIFIC REFERENCE BR
Sci. & Tech. Info. Cntr

NOV 16

Pat. & T.M. Office

Please search for

the ~~anti~~ method for synthesizing

the polymer of formula I (shown in Cl. #1)

as claimed in Cl. #3

~~the anti-reflective coating method~~

*
(2+ doesn't have to be for

an anti-reflective coating as recited

in Cl. #3)
(We didn't get that much) for the vacuum conditions part of the procedure.)

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>EA</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>11-17-06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

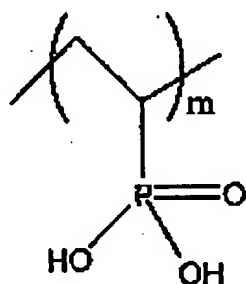
1. (Previously Presented) A method for forming a pattern on a semiconductor device comprising:

coating a photoresist film on a semiconductor substrate;

applying the organic anti-reflective coating composition on a top portion of the photoresist film, the organic anti-reflective coating comprising:

a polymer represented by the following formula I

Formula I



wherein m is an integer ranging from 5 to 5000; and

exposing and developing the photoresist film to produce a photoresist pattern.

2. (Previously Presented) The method according to claim 1, wherein the polymer has a molecular weight ranging from about 2,000 to about 10,000.

3. (Previously Presented) A method for preparing the organic anti-reflective coating used in the pattern forming method of claim 1 comprising:

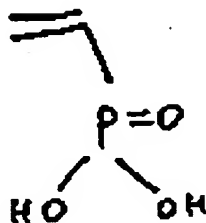
dissolving vinylphosphonic acid having a structure represented by the following formula II in organic solvent;

adding a polymerization initiator to the dissolved solution; and

conducting free-radical polymerization under vacuum condition, at a temperature ranging from about 60 to about 70°C for a time period ranging from about 2 two hours to

about 6 six hours to produce the organic anti-reflective coating polymer of Formula 1 of claim 1[[]]:

Formula II



4. (Previously Presented) The method according to claim 3, wherein the organic solvent comprises at least one material selected from the group consisting of tetrahydrofuran, cyclohexanone, dimethyl formamide, dimethyl sulfoxide, dioxane, methylethylketone, PGMEA, ethylacetate, benzene, toluene, xylene, and mixtures thereof.

5. (Previously Presented) The method according to claim 3, wherein the polymerization initiator comprises a material selected from the group consisting of 2,2'-azobis isobutyronitrile (AIBN), benzoyl peroxide, acetyl peroxide, lauryl peroxide, t-butyl peracetate, t-butyl hydroperoxide, di-t-butyl peroxide, and mixtures thereof.

6. (Previously Presented) The method according to claim 4, wherein the polymerization initiator comprises a material selected from the group consisting of 2,2'-azobis isobutyronitrile (AIBN), benzoyl peroxide, acetyl peroxide, lauryl peroxide, t-butyl peracetate, t-butyl hydroperoxide, di-t-butyl peroxide, and mixtures thereof.



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BIBDATASHEET

CONFIRMATION NO. 1407

Bib Data Sheet

SERIAL NUMBER 10/811,558	FILING DATE 03/29/2004 RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. 28925/39912
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APPLICANTS

Geun-soo Lee, Kyunggi-do, KOREA, REPUBLIC OF;
 Cheol-kyu Bok, Seoul, KOREA, REPUBLIC OF;
 Seung-chan Moon, Kyunggi-do, KOREA, REPUBLIC OF; Ki-soo Shin, Kyunggi-do, KOREA, REPUBLIC OF;
 Won-wook Lee, Kyunggi-do, KOREA, REPUBLIC OF;

CONTINUING DATA
 None SJL

FOREIGN APPLICATIONS
 REPUBLIC OF KOREA 2003-48520 07/16/2003 SJL

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
 08/08/2004

Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (e-d) conditions <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Verified and Acknowledged Examiner's Signature <i>[Signature]</i> SJL Initials	STATE OR COUNTRY KOREA, REPUBLIC OF	SHEETS DRAWING 2	TOTAL CLAIMS 17	INDEPENDENT CLAIMS 3
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ADDRESS
 04743
 MARSHALL, GERSTEIN & BORUN LLP
 6300 SEARS TOWER
 233 S. WACKER DRIVE
 CHICAGO, IL
 60606

TITLE
 Organic anti-reflective coating polymer, its preparation method and organic anti-reflective coating composition comprising the same

b e e e e c c c e b h e c b

=> FILE REG

FILE 'REGISTRY' ENTERED AT 20:04:47 ON 17 NOV 2006
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=> DISPLAY HISTORY FULL L1-

FILE 'REGISTRY' ENTERED AT 19:05:01 ON 17 NOV 2006

E VINYLPHOSPHONIC ACID/CN

L1 1 SEA "VINYLPHOSPHONIC ACID"/CN
L2 1 SEA "VINYLPHOSPHONIC ACID HOMOPOLYMER"/CN

FILE 'HCA' ENTERED AT 19:07:34 ON 17 NOV 2006

L3 681 SEA L1 OR L2
L4 53205 SEA RADICAL?(3A) (POLYM? OR COPOLYM? OR HOMOPOLYM? OR
TERPOLYM? OR RESIN?)
L5 170528 SEA (ORGANIC? OR ORG#) (2A) (SOLVEN? OR SOLUTION? OR
SOLN#)
L6 23 SEA L3 AND L4
L7 14 SEA L3 AND L5
L8 0 SEA L6 AND L7
L9 QUE INITIAT? OR INIT# OR PHOTOINIT?
L10 12 SEA L6 AND L9
L11 0 SEA L7 AND L9
L12 632113 SEA EVAC# OR EVACUAT? OR VACUUM? OR (LOW OR LOWER? OR
REDUC? OR REDN# OR DECREAS? OR DIMINISH? OR LESS?) (2A) (PR
ESS# OR PRESSUR?) OR INVACUO# OR VACUO#
L13 15 SEA L3 AND L12
L14 2 SEA L13 AND (L4 OR L5 OR L9)

FILE 'REGISTRY' ENTERED AT 19:14:13 ON 17 NOV 2006

E TETRAHYDROFURAN/CN

L15 1 SEA TETRAHYDROFURAN/CN
E CYCLOHEXANONE/CN
L16 1 SEA CYCLOHEXANONE/CN
E DMF/CN
L17 1 SEA DMF/CN
E DMSO/CN
L18 1 SEA DMSO/CN
E DIOXANE/CN
L19 1 SEA DIOXANE/CN
E MEK/CN
L20 2 SEA MEK/CN
E PGMEA/CN
L21 2 SEA PGMEA/CN
E ETHYLACETATE/CN

L22 E ETHYL ACETATE/CN
 1 SEA "ETHYL ACETATE"/CN
 E TOLUENE/CN
 L23 1 SEA TOLUENE/CN
 E XYLENE/CN
 L24 1 SEA XYLENE/CN

FILE 'HCA'

L25 500014 SEA (L15 OR L16 OR L17 OR L18 OR L19 OR L20 OR L21 OR
 L22 OR L23 OR L24) OR TETRAHYDROFURAN# OR THF OR
 CYCLYHEXANONE# OR DIMETHYLFORMAMIDE# OR (DIMETHYL# OR
 DI(A) (ME OR METHYL#)) (2A) (FORMAMIDE# OR SULFOXIDE#) OR
 DMF OR DMSO OR DIMETHYLSULFOXIDE# OR DIOXANE# OR
 METHYLETHYLKETONE# OR (METHYL# OR ME) (2A) (ETHYL# OR
 ET) (2A) KETONE#
 L26 657971 SEA PGMEA OR ETHYLACETATE# OR (ETHYL# OR ET) (A) ACETATE#
 OR BENZENE# OR C6H6 OR TOLUENE# OR MEC6H5 OR CH3C6H5 OR
 C6H5CH3 OR C6H5ME OR XYLENE#

FILE 'REGISTRY'

L27 E AIBN/CN
 1 SEA AIBN/CN
 E BENZOYL PEROXIDE/CN
 L28 1 SEA "BENZOYL PEROXIDE"/CN
 E ACETYL PEROXIDE/CN
 L29 1 SEA "ACETYL PEROXIDE"/CN
 E LAURYL PEROXIDE/CN
 L30 1 SEA "LAURYL PEROXIDE"/CN
 E TERT-BUTYL PERACETATE/CN
 L31 1 SEA "TERT-BUTYL PERACETATE"/CN
 E TERT-BUTYL HYDROPEROXIDE/CN
 L32 1 SEA "TERT-BUTYL HYDROPEROXIDE"/CN
 E DI-TERT-BUTYL PEROXIDE/CN
 L33 1 SEA "DI-TERT-BUTYL PEROXIDE"/CN

FILE 'HCA'

L34 64606 SEA (L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33) OR
 AIBN OR (BENZOYL# OR ACETYL# OR LAURYL#) (2A) PEROXIDE# OR
 BZ2O2 OR AC2O2 OR (BUTYL# OR BU OR TBU) (A) (PERACETATE#
 OR HYDROPEROXIDE# OR PEROXIDE#)
 L35 82 SEA L3 AND (L25 OR L26)
 L36 18 SEA L35 AND (L4 OR L5 OR L12 OR L34)
 L37 23 SEA L3 AND L34
 L38 12 SEA L37 AND (L4 OR L5 OR L12 OR L25 OR L26)
 L39 9 SEA L35 AND L9
 L40 6 SEA L37 AND L9
 L41 12 SEA L14 OR L39 OR L40
 L42 24 SEA (L10 OR L36 OR L38) NOT L41

L43 7 SEA L6 NOT (L41 OR L42)
L44 29 SEA (L7 OR L13 OR L37) NOT (L41 OR L42 OR L43)
L45 12 SEA L41 AND 1840-2003/PY, PRY
L46 22 SEA L42 AND 1840-2003/PY, PRY
L47 7 SEA L43 AND 1840-2003/PY, PRY
L48 28 SEA L44 AND 1840-2003/PY, PRY

=> FILE HCA

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=> D L45 1-12 CBIB ABS HITSTR HITIND

L45 ANSWER 1 OF 12 HCA COPYRIGHT 2006 ACS on STN

142:420102 Processing method for presensitized lithographic printing plate material and surface-protective agent. Suzuki, Toshitsugu; Konuma, Taro (Konica Minolta Medical & Graphic, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005114892 A2 20050428, 32 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-346680 20031006.

AB The method comprises (1) imagewise exposing the material with a photopolymerizable photosensitive layer contg. a compd. contg. a polymerizable ethylenic double bond, a photopolymn. **initiator**, and a polymer binder on an aluminum support, (2) developing the material, and (3) processing the material with the surface-protective agent contg. (a) a phosphonic acid compd. with mol. wt. <2000 and (b) a phosphonic acid compd. with mol. wt. ≥2000, and (4) heating the material at 50-200°. The method prevents dirt in non-image areas on multi-printing.

IT **27754-99-0**, Poly(vinylphosphonic acid)
(processing method for presensitized lithog. printing plate material using surface-protective agent contg. phosphonic acid compd.)

RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

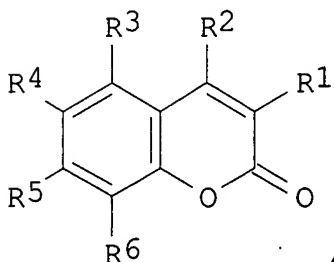
CMF C2 H5/O3 P



- IC ICM G03F007-40
ICS G03F007-00
- CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- IT 702689-29-0P, 1,3-Bis(1-isocyanato-1-methylethyl)**benzene**
-N-butyldiethanolamine-2-hydroxypropylene-1-methacrylate-3-acrylate-
NK Ester 4G copolymer
(photosensitive layer; processing method for presensitized lithog. printing plate material using surface-protective agent contg. phosphonic acid compd.)
- IT 1429-50-1 2809-21-4 9005-25-8D, Starch, reaction products with phosphonic acid 13598-36-2D, Phosphonic acid, reaction products with starch **27754-99-0**, Poly(vinylphosphonic acid) 850245-25-9
(processing method for presensitized lithog. printing plate material using surface-protective agent contg. phosphonic acid compd.)

L45 ANSWER 2 OF 12 HCA COPYRIGHT 2006 ACS on STN
142:420093 Photosensitive lithographic printing plate material and manufacture of printing plate using it. Takagi, Koji (Konica Minolta Medical & Graphic, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005114891 A2 20050428, 46 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 2003-346679 20031006.

GI



I

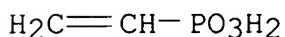
- AB The material has a photopolymerizable photosensitive layer contg. (a) a photopolymn. **initiator**, (b) a polymer binder, (c) a compd. contg. an addn.-polymerizable ethylenically unsatd. linkage, and (d) a dye I (R1-6 = H, alkyl, alkenyl, alkynyl, heteroaryl, heterocycle, alkoxy, cycloalkoxy, alkylthio, cycloalkylthio, arylthio, alkoxycarbonyl, aryloxycarbonyl, sulfamoyl, acyl, amide, carbamoyl, ureido, sulfinyl, alkylsulfonyl, arylsulfonyl, amino, halo, CN, NO2, OH) with absorption max. at 380-440 nm wavelength on an aluminum support coarsened by alternative electrolysis in a

HCl-contg. electrolytic soln. and anodized in a H₂SO₄-contg. electrolytic soln. providing an anodic oxide film with 3-5 g/m². The plate is manufd. by imagewise exposing the material to laser light with 350-450 nm wavelength and then developing the exposed material with an alk. developer with 10.0-12.5 pH. The material shows high sensitivity and improved storage stability at high humidity, preventing dirt on multi-printing.

IT **27754-99-0**, Poly(vinyl phosphonic acid)
(anodized aluminum support treated with; presensitized lithog. plate contg. sensitizing dye and using anodized aluminum support)
RN 27754-99-0 HCA
CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



IC ICM G03F007-09
ICS B41N001-14; B41N003-03; G03F007-00; G03F007-004
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT **27754-99-0**, Poly(vinyl phosphonic acid)
(anodized aluminum support treated with; presensitized lithog. plate contg. sensitizing dye and using anodized aluminum support)
IT 32760-80-8 850533-43-6
(photopolymn. **initiator**; presensitized lithog. plate contg. sensitizing dye and using anodized aluminum support)
IT 702689-29-0P, 1,3-Bis(1-isocyanato-1-methylethyl)**benzene**
-N-butylldiethanolamine-2-hydroxypropylene-1-methacrylate-3-acrylate-
NK Ester 4G copolymer
(photosensitive layer; presensitized lithog. plate contg. sensitizing dye and using anodized aluminum support)

L45 ANSWER 3 OF 12 HCA COPYRIGHT 2006 ACS on STN

142:207656 Photosensitive presensitized lithographic plates with good printing resistance, their development method, and image formation on them by laser irradiation. Hirabayashi, Kazuhiko (Konica Minolta Medical & Graphic, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005037483 A2 20050210, 58 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-197781-20030716.

AB The plates, useful for computer-to-plate (CTP) systems, comprise Al supports treated with polyvinyl phosphonates and photoimaging layers contg. (A) ≥ 1 dyes with max. absorption wavelength at 700-1200 nm and (B) amine monomers of R₄m1-

$n_1Q_1[(CH_2CR_1R_2O)aCONH(X_1NHCO_2)bx_2(O_2CCR_3:CH_2)c]n_1$ [$Q_1 = S, N, NEN$, etc.; $R_4 =$ (hydroxy)alkyl, aryl; $R_1, R_2 = H$, (alkoxy)alkyl; $R_3 = H$, Me, Et; $X_1 = C_2-12$ divalent group; $X_2 =$ di- to tetra-valent group, substituted aminophenyl (no. of amino = 1-3; no. of substituent = 1-4; substituent = alkyl, alkenyl, aryl, halo, alkoxy, heteroring); $E = C_2-12$ satd. hydrocarbonyl, 5- to 7-membered cyclic aliph. group having O, S, or ≥ 2 N in the ring, C_6-12 arylene, 5- to 6-membered hetero arom.; $a = 0-4$; $b = 0, 1$; $c = 1-3$; $m_1 = 2-4$; $n_1 = 1-4$] or $R_8g-fQ_2[(CH_2CR_5R_6O)d[CH_2C(CH_2O_2CCR_7:CH_2)HO]eH]f$ ($Q_2 = N$, NGN, etc.; $R_8 =$ same as R_4 ; $R_5, R_6 =$ same as R_1, R_2 ; $R_7 =$ same as R_3 ; $G =$ same as E ; $d, e, f = 1-4$; $g = 2-4$). The plates are developed by agents with no content of silicates.

IT **27754-99-0**, Vinylphosphonic acid homopolymer
(treating support with; photosensitive presensitized lithog.
plates with good printing resistance developability for laser
direct writing)

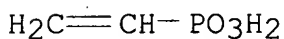
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC ICM G03F007-00

ICS G03F007-004; G03F007-027

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

IT 12176-31-7, (η - **Benzene**) (η -
cyclopentadienyl)iron(II) hexafluorophosphate 32760-80-8,
(η 6-Cumene) (η 5-cyclopentadienyl)iron(II) hexafluorophosphate
59183-95-8, [η 6-Naphthalene] [η 5-cyclopentadienyl]-Fe(II)-
hexafluorophosphate
(photopolymn. **initiators**; photosensitive presensitized
lithog. plates with good printing resistance developability for
laser direct writing)

IT **27754-99-0**, Vinylphosphonic acid homopolymer
(treating support with; photosensitive presensitized lithog.
plates with good printing resistance developability for laser
direct writing)

L45 ANSWER 4 OF 12 HCA COPYRIGHT 2006 ACS on STN

142:144073 Organic anti-reflective coating polymer, its preparation
method and organic anti-reflective coating composition comprising
the same. Lee, Geun-soo; Bok, Cheol-kyu; Moon, Seung-chan; Shin,

Ki-soo; Lee, Won-wook (S. Korea). U.S. Pat. Appl. Publ. US 2005014089 A1 20050120, 9 pp. (English). CODEN: USXXCO.
APPLICATION: US 2004-811558 20040329. PRIORITY: KR 2003-48520 20030716.

AB Disclosed are an org. anti-reflective coating polymer having a structure represented by the formula $[HCCH(P(:O)(OH)_2)]_m$ (m = integer 5-5,000), its prepn. method and an org. anti-reflective coating compn. with respect to an ultra-fine pattern formation process of the photoresist for photolithog. technique using ArF light source with a wavelength of 193 nm or VUV light source with a wavelength of 157 nm. An org. anti-reflective coating polymer capable of protecting a photoresist from amines in the atm. to minimize the post exposure delay effect after exposure to light and, at the same time, enhances notching status, such as, a pattern distortion caused by diffused reflection, and reducing reflection rate to minimize the swing effect. 1 wherein m is an integer ranging from 5 to 5000.

IT **27754-99-0P**, Vinylphosphonic acid homopolymer
(org. antireflective coating polymer)

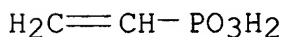
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

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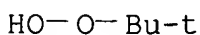


IT **75-91-2**, tert-Butyl hydroperoxide
78-67-1, AIBN **94-36-0**, Benzoyl
peroxide, uses **107-71-1**, tert-Butyl
peracetate **110-05-4**, Di-tert-butyl
peroxide **110-22-5**, Acetyl
peroxide **2895-03-6**, Lauryl
peroxide

(polymn. initiator; org. antireflective coating
polymer)

RN 75-91-2 HCA

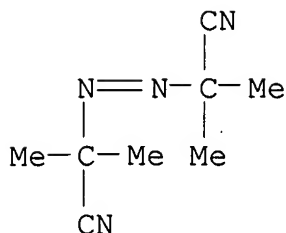
CN Hydroperoxide, 1,1-dimethylethyl (9CI) (CA INDEX NAME)



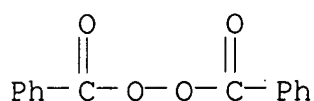
RN 78-67-1 HCA

CN Propanenitrile, 2,2'-azobis[2-methyl- (9CI) (CA INDEX NAME)

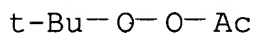
pres. app.



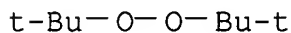
RN 94-36-0 HCA
 CN Peroxide, dibenzoyl (9CI) (CA INDEX NAME)



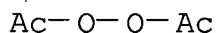
RN 107-71-1 HCA
 CN Ethaneperoxoic acid, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



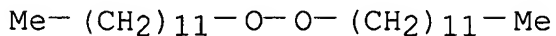
RN 110-05-4 HCA
 CN Peroxide, bis(1,1-dimethylethyl) (9CI) (CA INDEX NAME)



RN 110-22-5 HCA
 CN Peroxide, diacetyl (9CI) (CA INDEX NAME)



RN 2895-03-6 HCA
 CN Peroxide, didodecyl (9CI) (CA INDEX NAME)



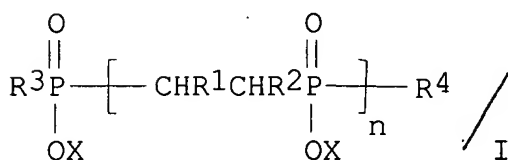
IC ICM G03C001-76
 INCL 430270100
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 Section cross-reference(s): 35, 38, 73
 ST antireflective coating polymer photoresist polymn **initiator**
 IT **27754-99-0P**, Vinylphosphonic acid homopolymer

(org. antireflective coating polymer)
 IT 75-91-2, tert-Butyl hydroperoxide
 78-67-1, AIBN 94-36-0, Benzoyl
 peroxide, uses 107-71-1, tert-Butyl
 peracetate 110-05-4, Di-tert-butyl
 peroxide 110-22-5, Acetyl
 peroxide 2895-03-6, Lauryl
 peroxide
 (polymn. initiator; org. antireflective coating
 polymer)

L45 ANSWER 5 OF 12 HCA COPYRIGHT 2006 ACS on STN

135:157347 Novel phosphorus compounds as corrosion and scale inhibitors
 and intermediates in preparing telomers. Davis, Keith Philip;
 Otter, Graham Philip; Woodward, Gary (Rhodia Consumer Specialties
 Limited, UK). PCT Int. Appl. WO 2001057050 A1 **20010809**,
 31 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB,
 BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI,
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ,
 PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT,
 BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR,
 IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English).
 CODEN: PIXXD2. APPLICATION: WO 2001-GB374 20010131. PRIORITY: GB
 2000-2278 20000202; GB 2000-11240 20000511.

GI



AB The invention is one of compds. which are novel, are useful
 corrosion and scale inhibitors and are valuable intermediates in
 prepg. telomers for use in water treatment. Compds. of formula I,
 wherein each of R1 and R2 are independently selected from hydrogen,
 a hydroxyl group, a carboxyl group, an alkyl, aryl or alkaryl group
 or a hydroxy or carboxy substituted alkyl, aryl or alkaryl group,
 provided that R1 and R2, together have a total of less than 23
 carbon atoms, R3 may either be hydrogen or a CHR1=CR2 group or be
 selected from the same categories as R4; R4 is a group, or polymeric
 chain comprising from 1 to 100,000 groups, said group or groups
 being derived from at least one ethylenically unsatd. compd.,

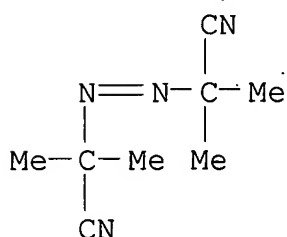
wherein the double bond is activated by an adjacent electron withdrawing group, and n is greater than 1. Applications of the novel phosphorus compds. include boiler water, cooling water, process water, oil field water, injection water, produced water and water used for hydrostatic testing of pipeline and in the squeeze treatment of oil wells.

IT **78-67-1**

(**initiator**; novel phosphorus compds. as corrosion and scale inhibitors and intermediates in prepg. telomers)

RN 78-67-1 HCA

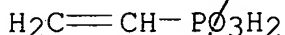
CN Propanenitrile, 2,2'-azobis[2-methyl- (9CI) (CA INDEX NAME)



IT **1746-03-8D**, Vinyl phosphonic acid, and water-sol. salts of (novel phosphorus compds. as corrosion and scale inhibitors)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)

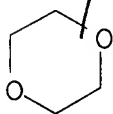


IT **123-91-1**, 1,4 Dioxane, uses

(solvent; novel phosphorus compds. as corrosion and scale inhibitors and intermediates in prepg. telomers)

RN 123-91-1 HCA

CN 1,4-Dioxane (9CI) (CA INDEX NAME)



IC ICM C07F009-30

ICS C07F009-48; C02F005-14; C08G079-04

CC 61-8 (Water)

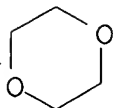
Section cross-reference(s): 35, 51, 58, 63, 72, 74

IT Azo compounds

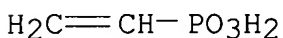
(**initiator**; novel phosphorus compds. as corrosion and scale inhibitors)

- IT 7722-84-1, Hydrogen peroxide, processes 7775-27-1, Sodium persulfate 14915-07-2D, Peroxide, org. compds.
(**initiator**; novel phosphorus compds. as corrosion and scale inhibitors)
- IT **78-67-1**
(**initiator**; novel phosphorus compds. as corrosion and scale inhibitors and intermediates in prepg. telomers)
- IT 74-86-2, Acetylene, reactions 79-10-7D, Acrylic acid, and water-sol. salts of 79-41-4D, Methacrylic acid, and water-sol. salts of 80-59-1D, Tiglic acid, and water-sol. salts of 97-65-4D, Itaconic acid, and water-sol. salts of 107-00-6, 1-Butyne 107-19-7, Propargyl alcohol 110-16-7D, Maleic acid, and water-sol. salts of 110-17-8D, Fumaric acid, and water-sol. salts of 142-45-0, Acetylene dicarboxylic acid 498-23-7D, Citraconic acid, and water-sol. salts of 498-24-8D, Mesaconic acid, and water-sol. salts of 499-12-7D, Aconitic acid, and water-sol. salts of 503-17-3, 2-Butyne 503-64-0D, Isocrotonic acid, and water-sol. salts of 1184-84-5D, Vinylsulfonic acid, and water-sol. salts of **1746-03-8D**, Vinyl phosphonic acid, and water-sol. salts of 3724-65-0D, Crotonic acid, and water-sol. salts of 6303-21-5, Hypophosphorous acid 6303-21-5D, Hypophosphorous acid, Et ester 6303-21-5D, Hypophosphorous acid, Me ester 6303-21-5D, Hypophosphorous acid, Pr ester 13708-85-5, Phosphonic acid, disodium salt 17466-29-4, Phosphonic acid potassium salt 34162-79-3D, and water-sol. salts of 49831-54-1, Phosphonic acid ammonium salt
(novel phosphorus compds. as corrosion and scale inhibitors)
- IT **123-91-1**, 1,4 **Dioxane**, uses
(solvent; novel phosphorus compds. as corrosion and scale inhibitors and intermediates in prepg. telomers)
- L45 ANSWER 6 OF 12 HCA COPYRIGHT 2006 ACS on STN
- 131:279057 Process for providing an optical element and optical element obtainable by such a process. Bos, Willem; Breeveld, Ricardo Henry; Vertommen, Luc Louis Theophile (Akzo Nobel N.V., Neth.). Eur. Pat. Appl. EP 947857 A2 **19991006**, 18 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-200787 19990312. PRIORITY: EP 1998-200928 19980324.
- AB Methods for providing an essentially homogeneous optical element (e.g., an optical lens, esp. an ophthalmic lens) are described which entail filling a mold with a mixt. comprising ≥ 1 monomers, ≥ 1 inits, and ≥ 1 radical polym. **initiators**, the d.p. of the monomers during filling being less than < 5 wt.%, polymg. the mixt. so that > 90 wt.% of all monomer is polymd., and removing the essentially homogeneous optical element from the mold. The mixt. mal also comprise a chain transfer agent. Optical elements produced using the methods are also described.

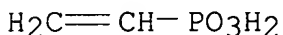
IT **123-91-1, 1,4-Dioxane**, reactions **1746-03-8**
 , Vinyl phosphonic acid **1746-03-8D**, Vinyl phosphonic acid,
 esters
 (monomer; molded polymer optical elements and their prodn. by
 polymn. in the mold)
 RN 123-91-1 HCA
 CN 1,4-Dioxane (9CI) (CA INDEX NAME)



RN 1746-03-8 HCA
 CN ~~Phosphonic acid, ethenyl-~~ (9CI) (CA INDEX NAME)



RN 1746-03-8 HCA
 CN ~~(Phosphonic acid, ethenyl-~~ (9CI) (CA INDEX NAME)



IC ICM G02B001-04
 ICS C08F004-00; C08F002-00
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 38, 63
 IT 75-01-4, reactions 78-79-5, reactions 80-62-6 96-05-9,
 Allylmethacrylate 96-33-3, Methyl acrylate 97-90-5,
 Ethanedioldimethacrylate 100-42-5, reactions 101-37-1
 106-99-0, 1,3-Butadiene, reactions 107-13-1, 2-Propenenitrile,
 reactions 107-25-5 108-05-4, Acetic acid ethenyl ester,
 reactions 109-53-5, Vinyl isobutyl ether 111-63-7, Vinyl
 stearate 123-81-9 **123-91-1, 1,4-Dioxane**,
 reactions 769-78-8 937-41-7, Phenyl acrylate 1026-92-2,
 Diallyl terephthalate 1070-70-8 1087-21-4, Diallyl isophthalate
 1123-84-8, 2,5-Dichlorostyrene 1337-81-1, Vinyl pyridine
1746-03-8, Vinyl phosphonic acid **1746-03-8D**, Vinyl
 phosphonic acid, esters 2082-81-7 2177-70-0, Phenyl
 (meth)acrylate 2234-20-0, 2,4-Dimethylstyrene 2274-11-5,
 1,2-Ethanediol diacrylate 2495-37-6 2998-04-1, Diallyl adipate
 3570-55-6, 2-Mercaptoethylsulfide 7559-82-2 7575-23-7,
 Pentaerythritol tetrakis (3-mercaptopropionate) 13048-33-4
 19362-77-7 25013-15-4, Vinyl **toluene** 25151-33-1

25322-68-3 25852-49-7, Polypropylene glycol dimethacrylate
27496-76-0, Vinyl **xylene** 33007-83-9, Trimethylolpropane
tris(3-mercaptopropionate) 38890-40-3, Styrene phosphonic acid
40220-08-4 42978-66-5 50323-05-2, Benzenedithiol 52496-08-9
56744-60-6, Diacryl 121 57472-68-1 58264-26-9,
Hexanedioldimethacrylate 61804-09-9 61804-12-4 87748-73-0
110871-05-1 121135-78-2 245445-33-4
(monomer; molded polymer optical elements and their prodn. by
polymn. in the mold)

L45 ANSWER 7 OF 12 HCA COPYRIGHT 2006 ACS on STN

130:180621 Crystal growth of hydroxyapatite in vitro and dental calculus
and plaque formation on human teeth in vivo. Gaffar, Abdul; Moreno,
Edgard C.; Afflitto, John; Mirajkar, Yelloji-Rao K.
(Colgate-Palmolive Company, Piscataway, NJ, 08855, USA). Water
Soluble Polymers: Solution Properties and Applications, [Proceedings
of a Symposium on Water Soluble Polymers: Solution Properties and
Applications], Las Vegas, Nev., Sept. 7-11, 1997, Meeting Date 1997,
91-104. Editor(s): Amjad, Zahid. Plenum: New York, N. Y. (English)
1998. CODEN: 67BEA6.

AB Sodium polyvinylphosphonic acid (SPVPA) was synthesized using vinyl
phosphonyl dichloride and azobisisobutyronitrile (**AIBN**) as
a radical **initiator**. The homopolymer obtained was
characterized by mol. wt., purity and impurities by using gel
permeation chromatog. and NMR. The pure polymer was used to assess
the influence on crystal growth kinetics of hydroxyapatite (HAP) in
vitro. Briefly, the exptl. soln. supersatd. with respect to
hydroxyapatite (HAP) was prepd. from stock solns. of CaCl₂, K₂HPO₄,
KH₂PO₄, and NaCl. The crystal growth was **initiated** by
adding pure seeds of HAP at 37 °C. The pptn. kinetics was
followed using a pH-stat and measuring calcium phosphate in the
soln. The effect of the polymer on the crystal growth kinetics was
assessed, and it was found that the polymer inhibited the growth at
10⁻⁵ M. The inhibitory effect of the polymer was related to its
adsorption onto the growing crystals. The adsorption parameters
were derived from an adsorption isotherm-yielding a K value of 1,950
mL/mM and the N value of 0.038 mM/m². A topical application of 1%
soln. of the polymer onto teeth was effective in reducing calculus
formation by 18% in rat model system. SPVPA was also very effective
in reducing adsorption (>90%) of radiolabeled bacteria,
Streptococcus mutans, and Actinomyces viscosus, onto saliva-coated
hydroxyapatite beads and disks. The polymer was also tested in
short-term human clin. studies and showed that 1% and 3% solns.
significantly (P = 0.05) reduced bacterial plaque film on teeth by
21 to 36%, resp. Collectively, the data indicated that the sodium
polyvinylphosphonic acid has the potential to prevent soft and hard
dental deposits on teeth.

IT **27754-99-0**, Polyvinylphosphonic acid

(crystal growth of hydroxyapatite in vitro and dental calculus and plaque formation on human teeth in vivo)

RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



CC 13-7 (Mammalian Biochemistry)

IT 27754-99-0, Polyvinylphosphonic acid

(crystal growth of hydroxyapatite in vitro and dental calculus and plaque formation on human teeth in vivo)

L45 ANSWER 8 OF 12 HCA COPYRIGHT 2006 ACS on STN

125:115515 Production of high-molecular-weight polystyrene by vinyl acid-catalyzed free radical polymerization. Priddy, Duane B.; Dais, Virginia A. (Dow Chemical Company, USA). PCT Int. Appl. WO 9618663 A1 **19960620**, 23 pp. DESIGNATED STATES: W: CA, CN, JP, MX; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US14191 19951102. PRIORITY: US 1994-355716 19941214; US 1995-459007 19950602.

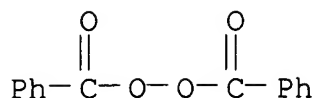
AB High-mol.-wt. poly(vinyl aroms.), esp. polystyrene, are produced by radical bulk polymn. in the presence of a sulfur- or a phosphorus-contg. vinyl acid at the 10-500 ppm level (based on vinyl arom. monomer). The polymers produced have a high mol. wt. of 500,000-2,000,000 and a lower mol. wt. of 50,000-200,000. Suitable sulfur-contg. vinyl acids include 2-sulfoethyl methacrylate, acrylamidopropanesulfonic acid, 2-sulfopropyl methacrylate, styrenesulfonic acid, or 2-sulfatoethyl methacrylate. Polymn. is advantageously carried out in the presence of a radical **initiator**, a stable nitroxyl free radical, and a chain transfer agent.

IT **94-36-0**, Dibenzoyl peroxide, uses **107-71-1**, tert-Butylperoxyacetate **110-05-4**, Di-tert-butyl **peroxide**

(**initiator**; prodn. of high-mol.-wt. polystyrene by vinyl acid-catalyzed free radical polymn. in presence of)

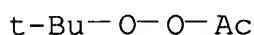
RN 94-36-0 HCA

CN Peroxide, dibenzoyl (9CI) (CA INDEX NAME)



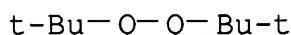
RN 107-71-1 HCA

CN Ethaneperoxoic acid, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



RN 110-05-4 HCA

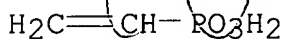
CN Peroxide, bis(1,1-dimethylethyl) (9CI) (CA INDEX NAME)



IT **1746-03-8**, Phosphonic acid, ethenyl-
(prodn. of high-mol.-wt. polystyrene by vinyl acid-catalyzed free radical polymn. in presence of)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C08F012-04

ICS C08F002-38; C08F212-04; C08F230-02

CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(radical, **initiators**; prodn. of high-mol.-wt. polystyrene by vinyl acid-catalyzed free radical polymn. in presence of)

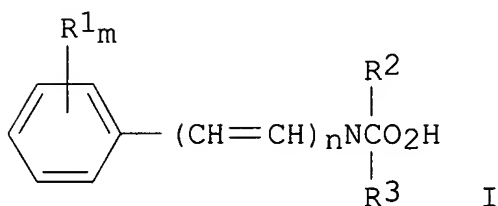
IT 80-43-3, Dicumyl peroxide **94-36-0**, Dibenzoyl peroxide, uses 105-74-8, Dilauroyl peroxide **107-71-1**, tert-Butylperoxyacetate **110-05-4**, Di-tert-butyl peroxide 614-45-9, tert-Butylperoxybenzoate 927-07-1, tert-Butylperoxy pivalate 1705-60-8 3006-86-8, 1,1-Bis(tert-butylperoxy)cyclohexane 6731-36-8, 1,1-Bis(tert-butylperoxy)-3,3,5-trimethylcyclohexane

(**initiator**; prodn. of high-mol.-wt. polystyrene by vinyl acid-catalyzed free radical polymn. in presence of)

IT **1746-03-8**, Phosphonic acid, ethenyl- 10595-80-9, 2-Sulfoethyl methacrylate 15214-89-8 26914-43-2, Styrenesulfonic acid 51956-67-3, 2-Sulfatoethyl methacrylate 145995-98-8 (prodn. of high-mol.-wt. polystyrene by vinyl acid-catalyzed free radical polymn. in presence of)

L45 ANSWER 9 OF 12 HCA COPYRIGHT 2006 ACS on STN
 125:22325 Photopolymerizable photosensitive materials with improved
 storage stability. Hashino, Tadashi; Imahashi, Satoshi (Toyo
 Boseki, Japan). Jpn. Kokai Tokkyo Koho JP 08029972 A2
19960202 Heisei, 6 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1994-158813 19940711.

GI



AB The title materials comprise a support with coatings of a layer made of a polymer having phosphonic acid and/or phosphinic acid groups in its side chain and a photosensitive layer contg. ≥ 1 ethylenic unsatd. compd. which is nongas at ordinary temp., a photoinitiator, and a phenylglycine deriv. I ($R_1 = C_1-12$ alkyl, C_2-12 alkenyl, C_2-12 alkynyl, C_1-8 alkoxy, cyano, alkylthio, phenoxy, C_2-6 monocarboxylic acid, its ester, its amide, Ph, C_2-5 alkanoyl, ammonium, pyridinium, nitro, alkylsulfinyl, alkyl sulfonyl, sulfamoyl, R_1 may condense the **benzene** ring to form a polycyclic compd.; $0 \leq m \leq 5$; $n = 0, 1$; $R_2, R_3 = H, C_1-12$ alkyl). The materials show excellent storage stability and high photosensitivity. Thus, an anodized Al support was coated with poly(vinylphosphonic acid) and with a compn. contg. Me methacrylate-methacrylic acid copolymer, tetraethylene glycol diacrylate, 2,2'-(o-chlorophenyl)-4,4',5,5'-tetraphenylbisimidazole, Michler's ketone, and N-phenylglycine and overcoated with a protective layer to give a presensitized lithog. plate.

IT **27754-99-0**, Poly(vinylphosphonic acid)
 (presensitized lithog. plate with undercoat layer of polymer
 contg. phosphonic acid or phosphinic acid group)

RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

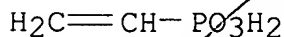
CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



- IC ICM G03F007-004
 ICS C08F002-48; G03F007-027; G03F007-028; G03F007-033; H05K003-00
 CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 IT **27754-99-0**, Poly(vinylphosphonic acid) 28806-77-1, Poly(vinylphosphinic acid) 55972-36-6, Methacrylic acid-vinylphosphonic acid copolymer 177348-14-0 (presensitized lithog. plate with undercoat layer of polymer contg. phosphonic acid or phosphinic acid group)
- L45 ANSWER 10 OF 12 HCA COPYRIGHT 2006 ACS on STN
 63:55446 Original Reference No. 63:10153h,10154a High-molecular-weight vinylphosphonic acid-modified elastomeric hydrocarbon polymers. (Farbwerke Hoechst A.-G.). GB 997820 **19650707**, 5 pp. (Unavailable). PRIORITY: DE 19610813.
- AB Elastomeric hydrocarbon polymers, esp. C₂H₄-C₃H₆ copolymers, in a CCl₄, tetrachloroethylene, **C₆H₆** or PhCl soln., are modified with 0-400% of a vinyl phosphonic acid (Brit. 858,057), excluding O, by using a peroxide and (or) an azo compd. as **initiator** at 20-200° for ≤48 hrs. An antioxidant, an antiozonant, and (or) a light stabilizer can be incorporated into the mixt. Use of a vinyl phosphoric acid yields a higher-mol.-wt. polymer and avoids the formation of HCl and POCl₃, which are produced by using PCl₃, O, and polyethylene-the usual method. These compds. improve the adhesion of metals and textiles with respect to dyes and inks. Also they impart better transparency to polyethylene. With a high P content, the polymers are self-extinguishing. For example, dissolve 100 parts of ethylene-propylene copolymer (reduced sp. viscosity, 2.7; 35 mole % propylene) in 1900 parts of PhCl. Add vinyl phosphonic acid 20, H₂O 40, and **Bz2O2** 1 part and agitate under N for 5 hrs. at 80°. Steam distil the solvent. Dry the remaining elastic copolymer in **vacuo** at 50°. The P content was 1.7%.
- IT **1746-03-8**, Phosphonic acid, vinyl- (rubber (ethylene-propene or other hydrocarbon) modification by, to increase mol. wt.)
- RN 1746-03-8 HCA
 CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)

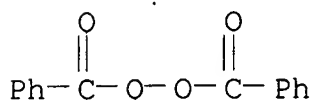


- IT **94-36-0, Benzoyl peroxide** (rubber (hydrocarbon) modification by vinyl-phosphonic acids)

increasing mol. wt. in presence of)

RN 94-36-0 HCA

CN Peroxide, dibenzoyl (9CI) (CA INDEX NAME)



IC C08D; C08F

CC 49 (Rubber and Other Elastomers)

IT 1438-74-0, Phosphonic dichloride, vinyl- **1746-03-8**,
Phosphonic acid, vinyl-

(rubber (ethylene-propene or other hydrocarbon) modification by,
to increase mol. wt.)

IT **94-36-0, Benzoyl peroxide**

(rubber (hydrocarbon) modification by vinyl-phosphonic acids
increasing mol. wt. in presence of)

L45 ANSWER 11 OF 12 HCA COPYRIGHT 2006 ACS on STN

57:76891 Original Reference No. 57:15358e-g Phosphorus-containing
polymers. Rochlitz, Fritz; Vilcsek, Herbert (Farbwerke Hoechst
A.-G.). DE 1130177 **19620524**, 3 pp. (Unavailable).
APPLICATION: DE 19600325.

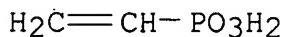
AB Monoesters of vinylphosphonic acids or their salts were polymerized,
possibly in the presence of other unsatd. org. compds., such as Me
methacrylate, acrylonitrile, or acrylic acid. Radical
initiators and redn.-oxidn. catalysts can be used. Compds.,
such as Cu acetylacetonate and Fe oleate, may be added. The
products are suitable for plastics, textiles, and the lacquer
industry. They can be used as coating agents for paper and as
emulsifiers and wetting agents. Flameproof styrene or Me
methacrylate copolymers were obtained. The emulsion
copolymerization of vinyl acetate and 1-4% monoester gave very
cold-resistant dispersions for wet rub-resistant coatings. Thus,
vinyl chloride 54, mono-octyl vinylphosphonate 6, and
azodiisobutyronitrile 0.6 part were heated at 50° for 8 hrs.
The white mass was dissolved in **tetrahydrofuran**, pptd. in
MeOH, and dried at 70° in **vacuo** to give a product
contg. 1% P.

IT **1746-03-8**, Phosphonic acid, vinyl-

(esters, polymers with Me methacrylate and vinyl acetate)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



INCL 39C

CC 47 (Plastics)

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, polymers with Me methacrylate and vinyl acetate)

L45 ANSWER 12 OF 12 HCA COPYRIGHT 2006 ACS on STN

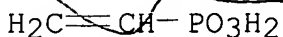
54:83960 Original Reference No. 54:16010h-i Phosphorus-containing
polymers. Kramer, Hans; Messwarb, Gunter; Denk, Walter (Farberke
Hoechst AG vorm. Meister Lucius & Bruning). DE 1032537
19580619 (Unavailable). APPLICATION: DE .

AB The polymerization of vinylphosphonic acid, its halides, or its
 α -substituted derivs., or the copolymerization of these
compds. with other monomers yields liquid or solid products which
are useful for the prepn. of textile auxiliaries, fireproofing
agents, emulsifiers, or plasticizers. The polymerization is started
by radical **initiation** or ultraviolet radiation. Thus,
styrene 50, vinylphosphonyl dichloride 5, and **Bz2O2** 0.5 g.
are subjected to reflux distn. in a N atm. for 24 hrs. The
resulting glasslike polymer is insol. in **C6H6** but swells
to an elastic gel.

IT **1746-03-8**, Phosphonic acid, vinyl-
(and α -derivs., polymerization of)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



INCL 39C

CC 31 (Synthetic Resins and Plastics)

IT **1746-03-8**, Phosphonic acid, vinyl-
(and α -derivs., polymerization of)

=> D L46 1-22 CBIB ABS HITSTR HITIND

L46 ANSWER 1 OF 22 HCA COPYRIGHT 2006 ACS on STN

142:299081 Phosphonic acid polymers-containing proton-conducting polymer
membrane coated with a catalyst layer, membrane/electrode unit and
the use thereof in fuel cells.. Belack, Joerg; Kundler, Isabel;
Schmidt, Thomas; Uensal, Oemer; Kiefer, Joachim; Padberg, Christoph;
Weber, Mathias (Pemeas G.m.b.H., Germany). PCT Int. Appl. WO
2005023914 A2 20050317, 51 pp. DESIGNATED STATES: W: AE, AG, AL,
AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,

US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2004-EP9899 20040904. PRIORITY: DE 2003-10340928 20030904.

- AB A proton-conducting polymer membrane contg. a catalyst layer with thickness 1-1000 μm from Pt, Pd, Au, Rh, Ir or/and Ru coated with a polymer prepd. by polymn. of phosphonic acid monomers is used for manuf. polymer electrolyte membranes for fuel cells having high power d. Thus, a membrane/electrode unit consisting of polybenzimidazole membrane doped with vinylphosphonic acid and 2 PTFE electrodes contg. Pt on carbon black support coated with polyvinylphosphonic acid (prepd. by **radical polymn** . of vinylphosphonic acid in the presence of an **initiator**) and dried at 100° can operate at 100-180°.
- IT **27754-99-0P**, Polyvinylphosphonic acid
(proton-conducting polymer membrane coated with catalyst layer coated with polymer prepd. by polymn. of phosphonic acid monomers for polymer electrolyte membranes)
- RN 27754-99-0 HCA
- CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



- IT **1746-03-8**, Vinylphosphonic acid
(proton-conducting polymer membrane coated with catalyst layer coated with polymer prepd. by polymn. of phosphonic acid monomers for polymer electrolyte membranes)
- RN 1746-03-8 HCA
- CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



- IC ICM C08J005-22
ICS H01M008-00; C08F008-00
- CC 38-3 (Plastics Fabrication and Uses)
- IT **27754-99-0P**, Polyvinylphosphonic acid
(proton-conducting polymer membrane coated with catalyst layer coated with polymer prepd. by polymn. of phosphonic acid monomers for polymer electrolyte membranes)
- IT **1746-03-8**, Vinylphosphonic acid
(proton-conducting polymer membrane coated with catalyst layer

coated with polymer prepd. by polymn. of phosphonic acid monomers for polymer electrolyte membranes)

L46 ANSWER 2 OF 22 HCA COPYRIGHT 2006 ACS on STN

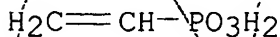
138:5635 Azlactone-functional reactive hydrophilic coatings and hydrogels and articles comprising coated substrates useful for immobilization of biological materials. Haddad, Louis C.; Hembre, James I.; Rasmussen, Jerald K.; Sarpong, Daniel (3M Innovative Properties Company, USA). PCT Int. Appl. WO 2002094890 A1 **20021128**, 30 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US5433 20020222. PRIORITY: US 2001-860944 20010518.

AB Surface coatings from azlactone-functional hydrogels and articles comprising a substrate which is a film, a plate, a particle, a fiber, a column, a bead, a web or a membrane with the coatings disposed thereon are disclosed. Methods of making the coating and controlling the gelation time of the hydrogels by providing a suitable crosslinking agent, e.g. a compd. contg. primary and secondary amino groups are also disclosed. The coatings have residual azlactone functionality which can be used for covalent attachment (immobilization) of biol. or other functional materials. Thus, a 40% solids **Me Et ketone** soln. of 80:20 wt./wt. dimethylacrylamide-vinyldimethylazlactone copolymer prepd. by std. free **radical polymn.** was dild. to 20% solids with isopropanol, formulated with enough ethylenediamine to provide a crosslink d. of $\approx 10\%$ by wt., then applied to a com. 1536-well plate. Upon drying, a reactive, azlactone-functional polymeric coating was obtained within the wells.

IT **1746-03-8DP**, Vinylphosphonic acid, polymers with azlactone-derived monomers (azlactone-functional reactive hydrophilic coatings and hydrogels and articles comprising coated substrates useful for immobilization of biol. materials)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



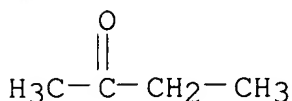
IT **78-93-3, Methyl ethyl ketone,**

uses

(solvent; azlactone-functional reactive hydrophilic coatings and hydrogels and articles comprising coated substrates useful for immobilization of biol. materials)

RN 78-93-3 HCA

CN 2-Butanone (8CI, 9CI) (CA INDEX NAME)



IC ICM C08F008-32

ICS C08F220-56; C08F226-06; C09D133-26; C08J007-12; C08J003-24; C12N011-08; C08K005-17; C08K005-5455; C08L033-26

CC 42-3 (Coatings, Inks, and Related Products)

Section cross-reference(s): 9, 37

IT 79-06-1DP, Acrylamide, derivs., polymers with azlactone-derived monomers 79-10-7DP, Acrylic acid, hydroxyalkyl esters, polymers with azlactone-derived monomers 79-39-0DP, Methacrylamide, derivs., polymers with azlactone-derived monomers 79-41-4DP, Methacrylic acid, polymers with azlactone-derived monomers 97-65-4DP, Itaconic acid, polymers with azlactone-derived monomers 100-43-6DP, 4-Vinylpyridine, polymers with azlactone-derived monomers 100-69-6DP, 2-Vinylpyridine, polymers with azlactone-derived monomers 105-16-8DP, 2-Diethylaminoethyl methacrylate, polymers with azlactone-derived monomers 110-16-7DP, Maleic acid, polymers with azlactone-derived monomers 110-17-8DP, Fumaric acid, polymers with azlactone-derived monomers 1121-55-7DP, 3-Vinylpyridine, polymers with azlactone-derived monomers **1746-03-8DP**, Vinylphosphonic acid, polymers with azlactone-derived monomers 2426-54-2DP, 2-Diethylaminoethyl acrylate, polymers with azlactone-derived monomers 15214-89-8DP, 2-Acrylamido-2-methyl-1-propanesulfonic acid, polymers with azlactone-derived monomers 18526-07-3DP, 3-Dimethylaminopropyl acrylate, polymers with azlactone-derived monomers 20602-77-1DP, 3-Dimethylaminopropyl methacrylate, polymers with azlactone-derived monomers 26914-43-2DP, Styrenesulfonic acid, polymers with azlactone-derived monomers 36885-49-1DP, polymers with azlactone-derived monomers 45021-77-0DP, (3-Acrylamidopropyl)trimethylammonium chloride, polymers with azlactone-derived monomers 87328-05-0DP, reaction products with crosslinked dimethylacrylamide-vinyldimethylazlactone copolymer 477273-94-2P 477273-95-3P 477273-96-4P 477273-97-5P 477273-98-6P

(azlactone-functional reactive hydrophilic coatings and hydrogels and articles comprising coated substrates useful for immobilization of biol. materials)

IT 67-63-0, Isopropanol, uses **78-93-3, Methyl ethyl ketone**, uses

(solvent; azlactone-functional reactive hydrophilic coatings and hydrogels and articles comprising coated substrates useful for immobilization of biol. materials)

L46 ANSWER 3 OF 22 HCA COPYRIGHT 2006 ACS on STN

136:188116 Stabilization of near-well-bore region of oil or water reservoirs by injection of chelating/binding/polymerizing agents. Kilaas, Lars; Lund, Are; Tayebi, Davoud; Sveen, Jostein; Kvernheim, Arne Lund; Ramstad, Marit Valeur; Eriksen, Odd Ivar; Lile, Ole Bernt; Saastad, Ole Widar (Sinvent AS, Norway). PCT Int. Appl. WO 2002014453 A1 **20020221**, 14 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-NO339 20010815. PRIORITY: NO 2000-4109 20000816.

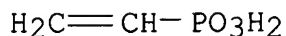
AB Stabilization of a formation in the near-well-bore region of a reservoir, one or several reservoir zones/sections or well gravel packages, and controlling specific reservoir phenomena such as scale, wax, hydrates, wettability, permeability and flow properties is described. The stabilization method comprises injecting, squeezing or placing chem. compds. with functional groups having both chelating/binding and reacting/polymg. properties into the formation prior to, during or after drilling where the chem. compds. used are sol. in the reservoir fluid. The functional groups in these chem. compds. complex with the hydroxyl groups or oxide groups at the surface of the rock or sand particles. In this way the formation particles will be coated with the monomer(s). If radical **initiators** are injected simultaneously, the elevated temp. in the well will cause a polymn. of the vinyl groups if present in the monomers (such as acrylamido-methylpropan-sulfonic acid). The polymg. reaction will take place both in the space between particles (thus forming pores) and at surface interfaces between adjacent particles.

IT **1746-03-8**, Vinylphosphonic acid

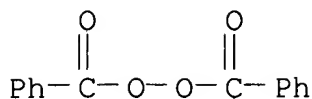
(chelating agents; stabilization of near-well-bore region of oil or water reservoirs by injection of chelating/binding/polymg. agents)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)

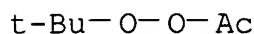


- IC ICM C09K017-40
ICS C09K017-18; E21B033-138
- CC 58-5 (Cement, Concrete, and Related Building Materials)
Section cross-reference(s): 38, 51
- IT **Polymerization** catalysts
(**radical initiators**; stabilization of near-well-bore region of oil or water reservoirs by injection of chelating/binding/polymg. agents)
- IT **1746-03-8**, Vinylphosphonic acid
(chelating agents; stabilization of near-well-bore region of oil or water reservoirs by injection of chelating/binding/polymg. agents)
- L46 ANSWER 4 OF 22 HCA COPYRIGHT 2006 ACS on STN
130:95989 Improved acid-catalyzed free **radical** bulk **polymerization** process. Pike, William C.; Priddy, Duane B. (The Dow Chemical Company, USA). PCT Int. Appl. WO 9900432 A1 **19990107**, 14 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US8392 19980424. PRIORITY: US 1997-50829 19970626.
- AB The process for prepg. high-mol.-wt. polymers from vinyl arom. monomers in the presence of an acid catalyst having a pKa of ≤ 2 at 25° or salt thereof comprises dispersing the acid catalyst, or salt thereof, in a (meth)acrylic acid or ester thereof, prior to contact with the monomers. The (meth)acrylic acid or ester allows the acid catalyst to be dispersed within the vinyl arom. monomer without causing cationic polymn. The acid catalyst, or salt thereof, catalyzes the free **radical polymn** . reaction such that high-mol.-wt. polymers are produced in reasonable reaction times.
- IT **94-36-0**, Dibenzoylperoxide, uses **107-71-1**, tert-Butylperoxyacetate **110-05-4**, Di-tert-butylperoxide **1746-03-8**, Vinylphosphonic acid
(catalysts; improved acid-catalyzed free **radical** bulk **polymn**. process for prepn. of high-mol.-wt. arom. vinyl polymers)
- RN 94-36-0 HCA
CN Peroxide, dibenzoyl (9CI) (CA INDEX NAME)



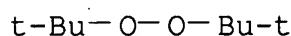
RN 107-71-1 HCA

CN Ethaneperoxoic acid, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



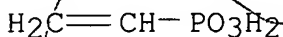
RN 110-05-4 HCA

CN Peroxide, bis(1,1-dimethylethyl) (9CI) (CA INDEX NAME)



RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C08F012-04

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

ST styrene **radical** bulk **polymn**; acid catalyst
dispersion styrene polymn; vinyl arom monomer acid **radical**
polymn catalyst

IT **Polymerization****Polymerization** catalysts(bulk, **radical**; improved acid-catalyzed free**radical** bulk **polymn**. process for prepn. of
high-mol.-wt. arom. vinyl polymers)

IT 79-10-7, Acrylic acid, uses 79-41-4, Methacrylic acid, uses
80-62-6, Methyl methacrylate 141-32-2, Butyl acrylate

(acid catalysts dispersed in; improved acid-catalyzed free

radical bulk **polymn**. process for prepn. of
high-mol.-wt. arom. vinyl polymers)

IT 75-75-2, Methanesulfonic acid 80-43-3, Dicumylperoxide

94-36-0, Dibenzoylperoxide, uses 104-15-4,

p-Toluenesulfonic acid, uses 105-74-8, Dilauroylperoxide

107-71-1, tert-Butylperoxyacetate **110-05-4**,

Di-tert-butylperoxide 614-45-9, tert-Butylperoxybenzoate

1746-03-8, Vinylphosphonic acid 2154-68-9,

3-Carboxy-2,2,5,5-tetramethyl-1-pyrrolidinyloxy 2564-83-2,

2,2,6,6-Tetramethyl-1-piperidinyloxy 3006-86-8,

1,1-Bis-tert-butylperoxycyclohexane 3144-16-9, Camphorsulfonic

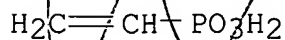
acid 3220-50-6, α -Phenylvinylphosphonic acid 6731-36-8,
 1,1-Bis-tert-butylperoxy-3,3,5-trimethylcyclohexane 7664-93-9,
 Sulfuric acid, uses 10595-80-9, 2-Sulfoethyl methacrylate
 26914-43-2, Styrenesulfonic acid 33028-26-1, 2-
 Acrylamidopropanesulfonic acid 38890-40-3, Styrenephosphonic acid
 40074-09-7, 2-Sulfoethyl acrylate 53459-43-1, 4-
 Vinylbenzylphosphonic acid 58086-67-2, 2-Fluoro-1-methylpyridinium
 tosylate 145995-98-8, 2-Sulfopropyl methacrylate
 (catalysts; improved acid-catalyzed free **radical** bulk
polymn. process for prepn. of high-mol.-wt. arom. vinyl
 polymers)
 IT 9003-53-6P, Polystyrene
 (improved acid-catalyzed free **radical** bulk
polymn. process for prepn. of high-mol.-wt. arom. vinyl
 polymers)

L46 ANSWER 5 OF 22 HCA COPYRIGHT 2006 ACS on STN
 130:27064 Polymeric compositions and methods for use in low temperature
 well applications. Funkhouser, Gary P.; Frost, Keith A.
 (Halliburton Energy Services Inc., USA). U.S. US 5840784 A
19981124, 6 pp. (English). CODEN: USXXAM. APPLICATION: US
 1997-851991 19970507.

AB The present invention relates to improved methods and compns. for
 performing well completion or remedial procedures in subterranean
 zones having temps. below .apprx. 70° F. The methods basically
 comprise the steps of introducing into the zone an aq. soln. of a
 polymerizable monomer, a polymn. **initiator** and an oxygen
 scavenger comprised of stannous chloride. Thereafter, the
 polymerizable monomer is allowed to polymerize in the zone. The
 stannous chloride scavenges oxygen without generating free
radicals and causing premature **polymn.**

IT **1746-03-8**, Vinyl phosphonic acid
 (polymerizable monomer; polymeric compns. and methods for use in
 low temp. well applications)

RN 1746-03-8 HCA
 CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C09K007-00

INCL 523130000

CC 51-2 (Fossil Fuels, Derivatives, and Related Products)

IT 2638-94-0, 4,4'-Azobis(4-cyanovaleric acid) 2997-92-4,
 2,2'-Azobis(2-methylpropionamidine) dihydrochloride 27776-21-2,
 2,2'-Azobis[2-(2-imidazolin-2-yl)propane] dihydrochloride
 (azo polymn. **initiator**; polymeric compns. and methods
 for use in low temp. well applications)

IT 79-06-1, 2-Propenamide, uses 79-10-7, 2-Propenoic acid, uses
79-39-0 79-41-4, uses 88-12-0, uses 818-61-1 923-02-4
924-42-5, N-Hydroxymethyl-acrylamide 1184-84-5, Vinylsulfonic acid
1746-03-8, Vinyl phosphonic acid 2680-03-7 2867-47-2,
N,N-Dimethylaminoethylmethacrylate 5205-93-6 5238-56-2
15214-89-8 21838-63-1 45155-43-9 51157-15-4 51410-72-1
(polymerizable monomer; polymeric compns. and methods for use in
low temp. well applications)

L46 ANSWER 6 OF 22 HCA COPYRIGHT 2006 ACS on STN

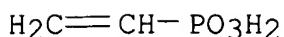
128:167727 A GC-MS study of the addition reaction of aryl amines with
acrylic monomers. Farahani, M.; Antonucci, J. M.; Karam, L. R.
(ADAHF Paffenbarger Research Center, NIST, Gaithersburg, MD, 20899,
USA). Journal of Applied Polymer Science, 67(9), 1545-1551
(English) **1998**. CODEN: JAPNAB. ISSN: 0021-8995.
Publisher: John Wiley & Sons, Inc..

AB Previous studies have shown that the interaction of carboxylic acid
groups with the amine functionalities of aryl amines, esp. secondary
and tertiary aryl amines, can lead to the free-radical
polymn. of acrylic monomers such as Me methacrylate. In
this study, the Michael addn. reaction of primary and secondary aryl
amines with acrylic monomers such as acrylic acid (AA) was
investigated. Equivalent amts. of either p-toluidine (PT) or
N-phenylglycine (NPG) and AA were combined in polar solvents such as
ethanol. The reactions were conducted at ambient (23°) or
near-ambient (37°-60°) temps. Samples (about 3-5 mg)
of these products were then trimethylsilylated with a soln.
consisting of 0.4 mL of bis(trimethylsilyl)trifluoroacetamide
(BSTFA) and 0.4 mL of acetonitrile by heating for 30 min at
140° under N. These derivs. were characterized by gas
chromatog.-mass spectrometry (GC-MS). The GC-MS analyses suggest
that 1 mol of the primary amine PT had reacted with 2 mol of AA to
yield the expected N-p-tolyliminodipropionic acid. Similarly, the
secondary amine NPG added to 1 mol of AA yielded the corresponding
mixed imino diacid, N-phenyliminoacetic-propionic acid. It would
appear that the Michael reaction of primary and secondary amines
with acrylic monomers may offer a general, facile synthetic route to
a variety of tertiary amines. Aryl amino acids of the type
synthesized in this study may find use in a no. of dental
applications, e.g., as surface-active adhesive agents and as polymn.
initiators or activators.

IT **1746-03-8**, Vinylphosphonic acid
(gas chromatog.-mass spectrometry study of Michael addn. reaction
of primary and secondary aryl amines with acrylic monomers)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 35-2 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 23, 63

IT 79-10-7, 2-Propenoic acid, reactions 97-65-4, reactions
 103-01-5, N-Phenylglycine 110-16-7, 2-Butenedioic acid (Z)-,
 reactions **1746-03-8**, Vinylphosphonic acid
 (gas chromatog.-mass spectrometry study of Michael addn. reaction
 of primary and secondary aryl amines with acrylic monomers)

L46 ANSWER 7 OF 22 HCA COPYRIGHT 2006 ACS on STN
 124:319377 Porous composite membrane and process. Moya, Wilson
 (Millipore Corporation, USA). PCT Int. Appl. WO 9603202 A1
19960208, 23 pp. DESIGNATED STATES: W: CN, JP, KR, RU; RW:
 AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE.
 (English). CODEN: PIXXD2. APPLICATION: WO 1995-US10080 19950725.
 PRIORITY: US 1994-281882 19940728.

AB The membrane comprises a porous membrane substrate having an av.
 pore size of 0.01-10 μ formed of a 1st polymer which is coated
 over its entire surface with a crosslinked 2nd polymer. The 2nd
 polymer is dissolved in a solvent with a free **radical**
polymn. initiator in the absence of a crosslinking
 agent. The 2nd polymer is crosslinked in situ and rendered insol.
 by mild heating and/or exposure to UV light.

IT **27754-99-0**, Poly(vinyl phosphonic acid)
 (porous composite membrane contg. substrate and surface with same
 configuration and manuf. process)

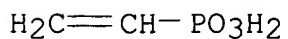
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC ICM B01D069-12

CC 38-3 (Plastics Fabrication and Uses)

IT 9002-84-0, Polytetrafluoroethylene 9002-88-4, Polyethylene
 9002-89-5, Polyvinyl alcohol 9003-01-4, Polyacrylic acid
 9003-07-0, Polypropylene 9003-39-8, Poly(vinyl pyrrolidone)
 24937-79-9, Polyvinylidene fluoride 26336-38-9, Poly(vinyl amine)
27754-99-0, Poly(vinyl phosphonic acid) 29499-22-7, Vinyl
 alcohol-vinyl amine copolymer 51729-06-7, Diallyldimethylammonium

chloride-vinyl alcohol copolymer

(porous composite membrane contg. substrate and surface with same configuration and manuf. process)

L46 ANSWER 8 OF 22 HCA COPYRIGHT 2006 ACS on STN

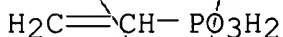
123:257821 Manufacture of polymers of vinylphosphonate esters with low content of residual monomers. Rupaner, Robert (BASF A.-G., Germany). Eur. Pat. Appl. EP 652238 A2 **19950510**, 8 pp. DESIGNATED STATES: R: DE, ES, FR, GB, IT, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1994-116963 19941027. PRIORITY: DE 1993-4337783 19931105.

AB **Radical polymn.** of CH₂:CHP(O)(OR₁)(OR₂) (R₁, R₂ = H, Me, Et; R₁ = R₂ ≠ H) and/or their salts, optionally combined with vinylsulfonic acid and/or their salts and 0-5% other H₂O-sol. monomers, using peroxydisulfate salts as **radical polymn. initiators** in aq. solns., gives polymers with low content of residual monomers, useful as fireproofing agents. Thus, polymn. of 1800 g CH₂:CHP(O)(OMe)₂ (the preferable monomer) in 520 g H₂O with continuous addn. of **initiator** soln. contg. 54 g Na₂S₂O₈ in 715 g H₂O at 80°-90° gave a polymer soln. contg. 60% solids. This (717 g) was blended with 4300 g of a com. dispersion (50% solids) comprising copolymers of 87.5% alkyl acrylate monomers, 10% acrylonitrile, and 2.5% N-methylolacrylamide to give a coagulate-free dispersion useful for coatings with improved fire resistance (no data).

IT **1746-03-8DP**, Vinylphosphonic acid, esters, polymers (manuf. of polymers of vinylphosphonate esters with low content of residual monomers)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C08F030-02

ICS C08L043-02

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 37

ST vinylphosphonate dimethyl polymn monomer residue; persulfate **initiator** vinylphosphonate polymn monomer residue

IT **Polymerization**

(**radical**, aq.; manuf. of **polymers** of vinylphosphonate esters with low content of residual monomers)

IT 7727-54-0, Ammonium peroxydisulfate 7775-27-1, Sodium peroxydisulfate

(aq. **radical polymn. initiator**;

manuf. of polymers of vinylphosphonate esters with low content of residual monomers)

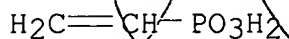
IT **1746-03-8DP**, Vinylphosphonic acid, esters, polymers
 167682-70-4P
 (manuf. of polymers of vinylphosphonate esters with low content
 of residual monomers)

L46 ANSWER 9 OF 22 HCA COPYRIGHT 2006 ACS on STN

114:230049 Preparation of novolaks with low contents of metal ions.
 Wojtech, Bernhard; Niederstaetter, Walter; Thamm, Horst-Dieter
 (Hoechst A.-G., Germany). Ger. Offen. DE 3923426 A1
19910117, 5 pp. (German). CODEN: GWXXBX. APPLICATION: DE
 1989-3923426 19890715.

AB The title novolaks, useful in photoresists and photocurable coatings
 (no data), are prepd. by treating 25-50% solns. of com. novolaks in
org. solvents with acids, preferably acidic
 complexing agents. Shaking a 30% soln. of novolak in
 EtOCH₂CH₂OAc-BuOAc-**xylene**, contg. 2.8 ppm Na and 1.3 ppm
 Fe, with 1% aq. oxalic acid (org.-aq. phase ratio 3:1) left an org.
 phase contg. 0.05 ppm Na and 0.004 ppm Fe.

IT **1746-03-8**, Vinylphosphonic acid
 (metal removal from novolaks by extn. with)
 RN **1746-03-8** HCA
 CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C08G008-00
 ICS C08J003-00; C08J003-11; C08L061-06
 ICA B01D011-04; G03F007-004
 CC 37-3 (Plastics Manufacture and Processing)
 IT 50-21-5, Lactic acid, uses and miscellaneous 50-81-7, L-Ascorbic
 acid, uses and miscellaneous 60-00-4, EDTA, uses and miscellaneous
 64-18-6, Formic acid, uses and miscellaneous 64-19-7, Acetic acid,
 uses and miscellaneous 67-42-5 69-72-7, Salicylic acid, uses and
 miscellaneous 74-90-8, Hydrocyanic acid, uses and miscellaneous
 77-92-9, Citric acid, uses and miscellaneous 79-14-1, Glycolic
 acid, uses and miscellaneous 87-69-4, (+)-Tartaric acid, uses and
 miscellaneous 110-15-6, Butanedioic acid, uses and miscellaneous
 139-13-9 141-82-2, Propanedioic acid, uses and miscellaneous
 144-62-7, Oxalic acid, uses and miscellaneous 482-54-2
1746-03-8, Vinylphosphonic acid 7647-01-0, Hydrochloric
 acid, uses and miscellaneous 7664-38-2, Phosphoric acid, uses and
 miscellaneous 7664-93-9, Sulfuric acid, uses and miscellaneous
 (metal removal from novolaks by extn. with)

L46 ANSWER 10 OF 22 HCA COPYRIGHT 2006 ACS on STN

101:171962 Polymerization of vinylphosphonic acid in protic solvents.
 Duersch, Walter; Herwig, Walter; Engelhardt, Friedrich (Hoechst

A.-G. , Fed. Rep. Ger.). Ger. Offen. DE 3248491 A1 **19840705**, 26 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1982-3248491 19821229.

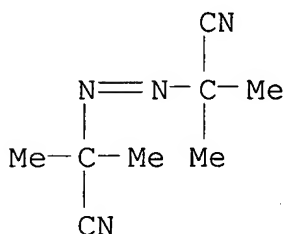
AB Vinylphosphonic acid (I) is polymd. in 10-150% protic solvent at 40-130° for 4-60 h in the presence of 1.0-5.5% aliph. peroxy ester, diacyl peroxide, and/or aliph. azo compd. with decompn. half-life temp. <122°. Thus, stirring 400 g I, 40 g H₂O, and 1.0 mL tert-Bu peroxy-2-ethylhexanoate (II) [3006-82-4] at 90° for 26 h while adding three 40-mL portions of H₂O and eleven 1.0-mL portions of II over 22 h gave a 71.0% soln. of polymer [27754-99-0] contg. 1.5% unreacted I.

IT **78-67-1**

(catalysts, for polymn. of vinylphosphonic acid in water and alcs.)

RN 78-67-1 HCA

CN Propanenitrile, 2,2'-azobis[2-methyl- (9CI) (CA INDEX NAME)



IT **27754-99-0P**

(manuf. of, by polymn. in alcs. and water, catalysts for)

RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC C08F030-02; C08F004-34; C08F004-04; C08L085-02; C09D005-08; C23F011-16

CC 35-4 (Chemistry of Synthetic High Polymers)

IT **Polymerization**

(**radical**, of vinylphosphonic acid, in water and alcs.)

IT **78-67-1** 105-64-6 105-74-8 927-07-1 3006-82-4

13122-18-4 92538-27-7

(catalysts, for polymn. of vinylphosphonic acid in water and alcs.)

IT 27754-99-0P 92488-64-7P

(manuf. of, by polymn. in alcs. and water, catalysts for)

L46 ANSWER 11 OF 22 HCA COPYRIGHT 2006 ACS on STN

92:215817 Vinyl polymerization. 392. Concept of hard and soft hydrophobic areas formed by hydrophilic macromolecules in water and hard and soft vinyl monomers. Imoto, Minoru; Ouchi, Tatsuro; Morita, Eiijiro; Yamada, Takashi (Fac. Eng., Kansai Univ., Suita, 564, Japan). Nippon Kagaku Kaishi (3), 333-7 (Japanese) 1980. CODEN: NKAKB8. ISSN: 0369-4577.

AB The **radical polymn.** of vinyl monomers takes place in the inner part of water-insol. fibers contg. hydrophilic groups, such as cellulose, silk, and nylon 6, and also in hydrophobic area formed by water-sol. polymers in water. This hydrophobic area including the inner part of the fibers can be divided into hard and soft ones, depending on its hydrophobicity. The vinyl monomers are also classified into hard and soft monomers, depending on their soly. in water. A theory is proposed that the **radical polymn.** of vinyl monomers is facilitated when the hardness of the hydrophobic area is comparable to that of the monomers. The monomer compns. in copolymers can be explained by this theory.

IT 27754-99-0

(vinyl polymn. in hydrophobic areas of, in water, hardness theory for)

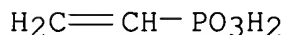
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



CC 35-3 (Synthetic High Polymers)

ST vinyl polymn hardness theory; fiber **initiated** vinyl polymn

IT **Polymerization**

(**radical**, of vinyl compds., in fibers and in hydrophobic areas of polymers, in water, hardness theory for)

IT 9005-25-8, reactions 25704-18-1 27084-61-3 27754-99-0

31472-22-7 50861-80-8 73817-42-2

(vinyl polymn. in hydrophobic areas of, in water, hardness theory for)

L46 ANSWER 12 OF 22 HCA COPYRIGHT 2006 ACS on STN

92:42454 Vinyl **polymerization**. 388. Mechanism of

radical polymerization of methyl methacrylate
initiated by the hydrophilic macromolecule-copper(II)
 ion-water system and derivation of the rate equation for
 polymerization. Imoto, Minoru; Ouchi, Tatsuro; Morita, Eihiro (Fac.
 Eng., Kansai Univ., Suita, 564, Japan). Nippon Kagaku Kaishi (11),
 1540-8 (Japanese) **1979**. CODEN: NKAKB8. ISSN: 0369-4577.

AB An initiation mechanism for the polymn. of methyl methacrylate
 [80-62-6] by a hydrophilic macromol./Cu(II) ion/water system
 included formation of a complex between the 3 **initiator**
 components which underwent subsequent H atom transfer from water to
 the methacrylate moiety. The invariance of the valency of Cu(II)
 ion during polymn. was confirmed by ESR spectra. The formation of a
 complex between Cu(II) ion and macromol. was ascertained by UV
 spectrum and electrocond. methods. An HMO calcn. supported the
 mechanism. Kinetic studies showed that (1) the hydrophilic
 macromols. formed a hydrophobic area (agglomerated macromols.)
 favorable to polymn.; (2) Me methacrylate was incorporated in the
 hydrophobic area; (3) and the **radical polymn.**
 proceeded in the hydrophobic area. The formation of the hydrophobic
 area of chondroitin sulfate and poly(vinylphosphonic acid) in a
 water phase was confirmed by SEM.

IT **27754-99-0**

(catalysts, contg. cupric ion and water, Me methacrylate
radical polymn. in presence of, mechanism of)

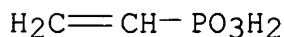
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



CC 35-4 (Synthetic High Polymers)

IT Macromolecular compounds

(hydrophilic, catalysts, contg. cupric ion and water, Me
 methacrylate **radical polymn.** in presence of,
 mechanism of)

IT **Polymerization** catalysts

(**radical**, hydrophilic macromol.-cupric ion-water, for
 Me methacrylate)

IT **Polymerization**

(**radical**, of Me methacrylate, in presence of cupric
 ion-hydrophilic macromol.-water, mechanism of)

IT Kinetics of **polymerization**

(**radical**, of Me methacrylate, in presence of

- hydrophilic macromol.-cupric ion-water **initiators**)
- IT 7732-18-5, uses and miscellaneous
(catalysts, contg. cupric ion and hydrophilic macromol., Me methacrylate **radical polymn.** in presence of, mechanism of)
- IT 9007-28-7 **27754-99-0**
(catalysts, contg. cupric ion and water, Me methacrylate **radical polymn.** in presence of, mechanism of)
- IT 15158-11-9, uses and miscellaneous
(catalysts, contg. hydrophilic macromol. and water, Me methacrylate **radical polymn.** in presence of, mechanism of)
- IT 80-62-6
(**polymn.** of, **radical**, in presence of cupric ion-water-hydrophilic macromol. **initiators**, mechanism of)

L46 ANSWER 13 OF 22 HCA COPYRIGHT 2006 ACS on STN

82:17230 Polymerization and copolymerization of vinylphosphonic acid.
Levin, Ya. A.; Romanov, V. G.; Ivanov, B. E. (Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR). Vysokomolekulyarnye Soedineniya, Seriya B: Kratkie Soobshcheniya, 16(7), 550-2 (Russian) **1974**.
CODEN: VYSBAI. ISSN: 0507-5483.

AB The most expedient method for the homopolymn. of vinylphosphonic acid (I) [**1746-03-8**] was conducting the polymn. in a pptg. agent (EtOAc) for 9-10 hr. Photopolymn. in **DMF** occurred at a measureable rate, in comparison to the slow polymn. of I in the presence of K₂S₂O₈ or **Bz₂O₂** or by the UV irradiation of I in aq. or Me₂SO solns. I had a low reactivity in copolymers. Reactivity ratios for I (M₁) with acrylic acid [79-10-7] (M₂) were $r_1=0.3\pm0.05$, $r_2=8\pm1$ and with methacrylic acid [79-41-4] (M_{2'}) $r'_1=0.15\pm0.02$, $r'_2=6\pm1$. I polymers and copolymers were of interest as polyelectrolytes. The polymers also had fire resistant properties.

IT **1746-03-8**
(homo- and copolymn. of)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 35-4 (Synthetic High Polymers)

IT **1746-03-8**
(homo- and copolymn. of)

L46 ANSWER 14 OF 22 HCA COPYRIGHT 2006 ACS on STN

78:84998 Synthesis and properties of poly(vinylphosphonic acid). Levin,

Ya. A.; Romanov, V. G.; Ivanov, B. E. (USSR). Sb. Nekot. Probl. Org. Khim., Mater. Nauch. Sess., Inst. Org. Fiz. Khim., Akad. Nauk SSSR, 106-8. Editor(s): Vereshchagin, A. N. Akad. Nauk SSSR, Inst. Org. Fiz. Khim.: Kazan, USSR. (Russian) **1972**. CODEN: 25WKA3.

AB Poly(vinylphosphonic acid) (I) [**27754-99-0**], prepd. by **radical-initiated polymn.** in bulk, in EtOAc, or H₂O solns. is a polyelectrolyte with unusual dependence of reduced viscosity (η_{sp}/C) on its concn. (C). A soln. of I in water contg. no low mol. wt. electrolyte does not obey the Fuoss equation (Fuoss, M.; Cathers, G., 1949), but its behavior can be expressed by the relation: $\eta_{sp}/C = a + b C^{-0.5}$ in which the a parameter has the same phys. significance as the parameter D in the Fuoss equation. The above relation gives the intrinsic viscosity of I in water. The anomaly of η_{sp}/C dependence on C is suppressed when sufficient KCl (.sim. 0.75 mole/l.) is added. The potentiometric titrn. of I does not differentiate between the 1st and the second acid group of I, because of the proximity of PO(OH)₂ groups and a strong electrostatic interaction between them. Refluxing I in tri-Et orthoformate gives polymer contg. PO(OH)OEt side groups.

IT **27754-99-0**

(reduced viscosity of, concn. dependence of)

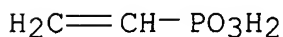
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



CC 35-6 (Synthetic High Polymers)

IT **27754-99-0**

(reduced viscosity of, concn. dependence of)

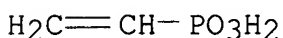
L46 ANSWER 15 OF 22 HCA COPYRIGHT 2006 ACS on STN

62:52355 Original Reference No. 62:9305f-g Synthesis of some curable, phosphorus-containing polyesters. Yuldashev, A.; Tulyaganov, S. Doklady Akademii Nauk UzSSR, 21(10), 38-40 (Russian) **1964**. CODEN: DANUAO. ISSN: 0134-4307.

AB The transesterification of esters of vinylphosphonic acid with aliphatic dihydroxy compds. and the hardening of the products were investigated. Heating 18.94 g. CH₂:CHP(O)Cl₂ with 14.39 g. pyrocatechol to 100° for 4 hrs., with subsequent distn. in **vacuo**, yielded cyclic o-phenylene vinylphosphonate (I), very hygroscopic, b₅ 142-5°, m.p. 44-7°. I (2.96 g.) was

transesterified in the presence of 0.01 g. ZnCl_2 with 1.01 g. $(\text{HOCH}_2)_2$ at $160-70^\circ$, first at atm. pressure under N then at 4-5 mm., yielding 1.95 g. polymer, $[-\text{P}(:\text{O})(\text{CH}:\text{CH}_2)\text{OCH}_2\text{CH}_2\text{O}-]_n$ (II), which is a yellow, viscous liquid, sol. in EtOH, **dioxane**, **C6H6**, and tricresol. II (1.95 g.) was cured with 0.09 g. **Bz2O2** at $80-90^\circ$ for 10 hrs., giving a hard, insol., infusible, and nonflammable mass.

IT **1746-03-8**, Phosphonic acid, vinyl-
(polyesters)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



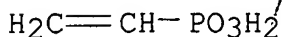
CC 48 (Plastics Technology)
IT **1746-03-8**, Phosphonic acid, vinyl-
(polyesters)

L46 ANSWER 16 OF 22 HCA COPYRIGHT 2006 ACS on STN

59:62570 Original Reference No. 59:11562e-g Vinylphosphonic acid esters. (Farbenfabriken Bayer A.-G.). GB 882703 **19611115**, 8 pp. (Unavailable). PRIORITY: DE 19590204.

AB Ester chlorides $\text{CH}_2:\text{CHP}(\text{X})(\text{OR})\text{Cl}$, where X is O or S and R is a C1-6 alkyl group, are treated with Na salts of phenol derivs., aliphatic alcs., and alkyl halides (in the presence of KSH) to give $\text{CH}_2:\text{CHP}(\text{X})(\text{OR})\text{R}'$ (I), where R' is a phenoxy, alkoxy, or alkylthio group, which can be used against aphids and spider mites. Thus, 145 g. $\text{CH}_2:\text{CHP}(\text{O})\text{Cl}_2$ in 1000 ml. petr. ether is added to a mixt. of 101 g. Et3N and 48 g. anhyd. EtOH to give $\text{CH}_2:\text{CHP}(\text{O})(\text{OEt})\text{Cl}$ (II), b1 49° , 75% yield. Similarly prepd. is $\text{CH}_2:\text{CHP}(\text{S})(\text{OEt})\text{Cl}$, b1 48° , 68% yield. II (39 g.) is added dropwise at $30-40^\circ$ to a soln. of 40 g. $\text{p-O}_2\text{NC}_6\text{H}_2\text{ONa}$ in 150 ml. MeEtCO, the mixt. is agitated 1 hr., the mixt. is added to 300 ml. ice H_2O , the oil that seps. is taken up in 200 ml. **C6H6**, the **C6H6** soln. is treated with 4% NaHCO_3 , and the **org. soln** is distd. to give 35 g. O-ethyl O-(p-nitrophenyl) vinylphosphonate, b0.01 119° , 55% yield. Similarly prepd. are I (R = Et) (X, R', b.p., and % yield given): O, 3,4-Me(MeS) $\text{C}_6\text{H}_8\text{O}$, b0.01 112° , 59; S, $\text{OCH}_2\text{CH}_2\text{SEt}$, b0.01 79° , 53; S, p-Cl $\text{C}_6\text{H}_4\text{S}$, b0.01 126° , 49; S, $\text{OCH}_2\text{CH}_2\text{NEt}_2$, b0.01 88° , 64; S, p-MeSC $\text{C}_6\text{H}_4\text{O}$, --, 83; S, p-O $_2\text{NC}_6\text{H}_4\text{O}$, b0.01 118° , 67; S, 2,4,5-Cl $_3\text{C}_6\text{H}_2\text{O}$, --, 72; S, 2,4-Cl $_2\text{C}_6\text{H}_3\text{O}$, --, 73; O, $\text{SCH}_2\text{CH}_2\text{SEt}$, b0.01 80° , 42; S, SCH_2SEt , b0.01 70° , 61; S, $\text{SCH}_2\text{CH}_2\text{SEt}$, b0.01 79° , 53; S, p-Cl $\text{C}_6\text{H}_4\text{SCH}_2\text{S}$, --, 72; S, SCH_2SPh , --, 70; S, $\text{SCH}_2\text{-CH}_2\text{NEt}_2$, b0.01 84° , 45; S, 3,4-Me(MeS) $\text{C}_6\text{H}_8\text{O}$, b0.01 110° , 69; S, $\text{SCH}(\text{Me})\text{CH}_2\text{SEt}$, b0.01 94° , 59; S, SCH_2CN , b0.01 86° , 58; S, SCH_2Bz , --, 90.

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)

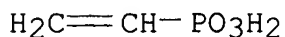


CC 39 (Organometallic and Organometalloidal Compounds)
IT **1746-03-8**, Phosphonic acid, vinyl-
(esters)

L46 ANSWER 17 OF 22 HCA COPYRIGHT 2006 ACS on STN
57:76946 Original Reference No. 57:15371a-c Phosphorus-containing
copolymers. Rochlitz, Fritz; Vilcsek, Herbert; Koch, Gerold.
(Farbwerke Hoechst A.-G.). DE 1135176 **19620823**, 4 pp.
(Unavailable). APPLICATION: DE 19600108.

AB Vinylphosphonic acid was copolymerized with vinyl acetate or with
vinyl acetate and the di-Et ester of vinylphosphonic acid in bulk by
using **Bz2O2** or **Me Et ketone**
peroxide. Vinylphosphonic acid was copolymerized with acrylic acid,
acrylonitrile, Me acrylate, or Me methacrylate in soln. in MeOH or
iso-PrOH by using **Bz2O2** as catalyst or with vinyl acetate,
vinyl acetate with di-Bu maleate, or styrene in aq. emulsion by
using K2S2O8 as catalyst. The products are flame-resistant and
useful in the textile and coating industries.

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, polymers with vinyl compds.)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



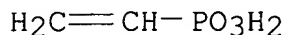
INCL 39C
CC 47 (Plastics)
IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, polymers with vinyl compds.)

L46 ANSWER 18 OF 22 HCA COPYRIGHT 2006 ACS on STN
55:140616 Original Reference No. 55:26543a-b Poly(vinylphosphonic
acid). Herbst, Willy; Rochlitz, Fritz; Vilcsek, Herbert (Farbwerke
Hoechst AG). DE 1106963 **19610518** (Unavailable).
APPLICATION: DE .

AB Vinylphosphonic acid (I) and its salts are polymerized by the action
of catalysts, e.g. K2S2O8, **Me Et ketone**
peroxide, **Bz2O2**, and (or) exposure to ultraviolet rays,
and (or) thermal treatment. Thus, 150 parts I was dissolved in 150

parts iso-PrOH and heated with 0.75 part II to 85-90° for 5 hrs. to give a highly viscous, clear soln. The new polymers are useful as intermediates in the prepn. of plastics and in the prepn. of flame-retarding compns.

IT **1746-03-8**, Phosphonic acid, vinyl-
(and salts, polymerization of, for flame-retarding compns. and plastic intermediates)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



INCL 39C

CC 31 (Synthetic Resins and Plastics)

IT **1746-03-8**, Phosphonic acid, vinyl-
(and salts, polymerization of, for flame-retarding compns. and plastic intermediates)

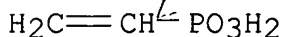
L46 ANSWER 19 OF 22 HCA COPYRIGHT 2006 ACS on STN

54:55912 Original Reference No. 54:10833h-i,10834a-e Preparation and properties of dimethylphosphinic acid and several derivatives. Reinhardt, Heinz; Bianchi, Dario; Molle, Dieter (Battelle Inst. e.V., Frankfurt Main, Germany). Chemische Berichte, 90, 1656-60 (Unavailable) **1957**. CODEN: CHBEAM. ISSN: 0009-2940.
OTHER SOURCES: CASREACT 54:55912.

AB Me₂P(O)OH (I) was prepd. from (Me₂PS)₂ (II). Several of its derivs. were described and the polymerization behavior of several unsatd. derivs. investigated. MeMgBr (from 380 g. MeBr, 97 g. Mg turnings, and 1500 cc. Et₂O) treated dropwise with 208 g. PSCl₃ with cooling at -25 to -30° (internal temp. 3-5°), when the reaction was finished the solid product hydrolyzed with ice and 10% H₂SO₄, the ppt. filtered off, washed with H₂O and a little EtOH, dried at 60°, and recrystd. from 3:1 PhMe-EtOH gave 95 g. II, m. 226.5-7.5°. II (7.5 g.) in 300 cc. CCl₄ refluxed and irradiated (lamp with 80 w. absorption capacity) 1 hr. while introducing Cl and after 3-4 hrs. the cryst. ppt. filtered off under N gave quant. MePCl₄, m. 198-9°, decomp. in air and vigorously with H₂O. If the chlorination was continued 6 hrs. in the above expt. there formed (Cl₃C)₂PCl₃, m. 187-8°. To a refluxing suspension of 150 g. II in 500 cc. CCl₄ was added slowly dropwise with stirring 235 cc. 35% H₂O₂, the mixt. then refluxed and stirred 1.5 hrs., cooled, filtered (the filtrate sepd. into 2 phases), the aq. phase dried in **vacuo** at 40° over P₂O₅, and the product (144 g.) recrystd. from hot **C₆H₆** to give I, m. 88.5-90.5°. I (10 g.), 0.1 g. iodine, 0.2 g. red P, and 0.5 g. PCl₅ in 250 cc. CCl₄ treated 5 hrs. with Cl under reflux and ultraviolet irradiation, filtered, the filtrate concd.,

and the product recrystd. from **C6H6** or Et2O gave 7.5 g. Cl3CPMe(O)OH, m. 161-1.5°. I (20 g.) and 44.4 g. PCl5 allowed to stand 1 hr. at 115° and the mixt. fractionated gave 20.5 g. Me2P(O)Cl (III), m. 64-6°, b. 204-5°. III (33.5 g.) in 500 cc. abs. **C6H6** treated with small portions of 7 g. Na in 120 cc. MeOH under ice cooling, the mixt. allowed to stand 12 hrs. at room temp., filtered, and the filtrate distd. gave 25.1 g. Me2P(O)OMe (IV), b. 78.5-9.5°, nD22 1.4299. III (19 g.) and 0.215 g. AlCl3 in 100 cc. **C6H6** treated 1 hr. at 20-5° (internal temp.) with ethylene oxide, the mixt. filtered, and the filtrate fractionated gave practically quant. Me2P(O)OCH2CH2Cl, b. 125-7°, nD20 1.4581. The following esters of I were prepd. as IV (ester radical, b.p./mm., nD/temp., % yield given): allyl, 97.5-8.5°/14, 1.4456/22°, 65; CH2:OMeCH2, 103-4°/13.5, 1.4507/20°, 90; propargyl, 89-9.5°/2.5, 1.4608/22°, 75; butynyl, 81-1.5°/2.5, 1.4534/22°, 80; crotyl, 108°/11, 1.4543/21°, 78. The unsatd. esters of I (10 g.), treated with 0.1 g. **Bz2O2** and heated 25 hrs. at 80°, 25 hrs. at 115°, and 65 hrs. at 140°, were converted into polymers, the esters becoming more and more viscous and of a reddish brown color. The unsatd. esters subjected to ultraviolet irradiation 100 hrs. under the above conditions but without **Bz2O2** did not polymerize.

IT **1746-03-8**, Phosphonic acid, vinyl-
(and esters and anhydride)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 10B (Organic Chemistry: Aliphatic Compounds)

IT **1746-03-8**, Phosphonic acid, vinyl-
(and esters and anhydride)

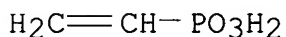
L46 ANSWER 20 OF 22 HCA COPYRIGHT 2006 ACS on STN

53:65489 Original Reference No. 53:11882i,11883a-c Polyphosphonates and vinyl chloride plasticizers therefrom. Johnson, John H.; Fields, Joseph E. (Monsanto Chemical Co.). US 2844618 **19580722** (Unavailable). APPLICATION: US .

AB Telomers of the general formula $[-\text{CH}_2\text{CH}_2\text{P}(\text{:O})(\text{OR})\text{OR}']_n\text{X}$, in which R and R' are alkyl radicals of 1-8 C atoms, n is 2-50, and X is a solvent, are prepd. from dialkyl vinylphosphonates with reactive solvents (alkylated **benzenes**, polyhalogenated methanes and ethanes, and dialkyl phosphonates) by standard free radical-catalyst procedures. They are useful as nonblooming plasticizers for

poly(vinyl chloride) (I). Thus, a mixt. of 35 g. (BuO)₂(O:)PCH:CH₂ (II) in 138 g. CCl₄ with 1.75 g. **Bz2O2** was heated with stirring at 95° for 19 hrs. and stripped to 175° at 1-2 mm. to give 43 g. light-yellow telomer of CCl₄ and II, n_{25D} 1.4738 (1.4762 in a 2nd run, where sp. gr. = 1.119), with an av. n = 3.18, sol. in **C6H6**, and sol. in lubricating oil up to 3%. II (35 g.) heated with 105 g. (BuO)₂POH and 1.75 g. **Bz2O2** at 95° for 72 hrs. and stripped to 200° (1-2 mm.) gave 47 g. of a viscous, liquid adduct (13.17% P). Treatment of 35 g. (Et₂O)₂(O:)PCH:CH₂ with CCl₄ and **Bz2O2** gave 37 g. of a sirupy final product, sol. in water with accompanying hydrolysis. Use of II with p-cymene or (Me₂CH)₂C₆H₄, with di-tert-Bu **peroxide** as catalyst at 120°, gave low-mol. liquid products in good yield. Test data are given on plasticized I.

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters of poly-, telomers of, as plasticizers for poly(vinyl chloride))
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)

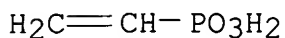


CC 31 (Synthetic Resins and Plastics)
IT 56-23-5, Carbon tetrachloride, polymers with ethylenephosphonates
99-87-6, p-Cymene, telomers with ethylenephosphonates 682-30-4,
Phosphonic acid, vinyl-, diethyl ester, complex with CCl₄
682-76-8, Phosphonic acid, vinyl-, dibutyl ester, complex with CCl₄
25321-09-9, **Benzene**, diisopropyl-, telomers with ethylenephosphonates
(as plasticizers for poly(vinyl chloride))
IT **1746-03-8**, Phosphonic acid, vinyl-
(esters of poly-, telomers of, as plasticizers for poly(vinyl chloride))

L46 ANSWER 21 OF 22 HCA COPYRIGHT 2006 ACS on STN
53:23022 Original Reference No. 53:4179g-h Synthesis and properties of diaryl esters of vinylphosphonic acid. Geftter, E. L. Khimicheskaya Nauka i Promyshlennost, 3, 544 (Unavailable) **1958**. CODEN: KHNPAX. ISSN: 0368-5586.
AB CH₂:CHPO(OAr)₂ (I) were prepd. by the following procedure. Dichloroanhydride of β-chloroethylphosphonic acid (0.1 mole) and 0.22-0.25 mole PhOH (or a substituted phenol) was heated 6-8 hrs. with vigorous stirring at 150-90° till no more HCl was evolved, 0.12-0.14 mole Et₃N in twice the vol. of **C6H6** added to the dark liquor, boiled 3 hrs. on an H₂O bath, H₂O added, the **C6H6** sepd., excess Et₃N distd. in **vacuo**, and I distd. at 2-3 mm. yielding 70-80% I (Ar, b₂₋₃, n_{20D}, and d₂₀ of I

given): Ph, 142°, 1.5555, 1.1947; 4-ClC₆H₄, 186-9°, 1.5681, 1.3422; 3,4-Me₂-C₆H₃, 190-2°, 1.5512, 1.1439.

IT **1746-03-8**, Phosphonic acid, vinyl-
(diaryl esters)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 10E (Organic Chemistry: Benzene Derivatives)

IT **1746-03-8**, Phosphonic acid, vinyl-
(diaryl esters)

L46 ANSWER 22 OF 22 HCA COPYRIGHT 2006 ACS on STN

49:23602 Original Reference No. 49:4527g-i,4528a-g Syntheses with dicarboxylic acids. VIII. Some derivatives of cyclopentanone-o-carboxylate esters. Treibs, Wilhelm; Mayer, Roland; Madejski, Maria (Univ. Leipzig, Germany). Chemische Berichte, 87, 356-64 (Unavailable) **1954**. CODEN: CHBEAM. ISSN: 0009-2940.
OTHER SOURCES: CASREACT 49:23602.

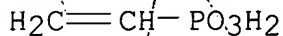
GI For diagram(s), see printed CA Issue.

AB Continuing the work by T. and Mayer (C.A. 47, 1604d), condensations are carried out with Et cyclopentanone-o-carboxylate (I) and halogenated dicarboxylic acids. Adding dropwise 65 g. I to 15 g. powd. K in 200 cc. **xylene**, keeping the mixt. 1.5-2 h., boiling it 10 h. with 85 g. ClO₂H₂Br, and fractionating the filtered and washed **xylene** soln. in **vacuo** give 61% 1-carbethoxy-1-decyl-2-cyclopentanone (II), b₃ 174° d₂₀ 0.9540, n_{D20} 1.4582 (semicarbazone, m. 92°). Sapon. of II 1 h. with 20% NaOH gives 80-5% α-decyladipic acid (III), lance-like crystals, m. 83°. Distg. 25 g. III very slowly gives 84% 1-decyl-2-cyclopentanone, b₃ 137°, d₂₀ 0.8835. n_{D20} 1.4560 (semicarbazone, m. 182°). Treating the K compd. of I with an equiv. amt. of PhCH₂Br 1 h. at 0°, 3 h. at 20°, and 3 h. at 50° gives 55% 1-benzyl-1-carbethoxy-2-cyclopentanone (IV), b₁ 154-5°. Refluxing 24.6 g. IV with concd. HCl gives 84% 1-benzyl-2-cyclopentanone (V), b₃ 120-1°. Refluxing 24.6 g. IV 8 h. with 10% NaOH washing the mixt. with ether, and acidifying the aq. soln. give 90% α-benzyladipic acid, m. 116-17°. Adding 19 g. etched Zn scales and 100 cc. **C₆H₆** to 52 g. V and 50 cc. CH₂BrCO₂Et, controlling the reaction by cooling, and warming the mixt. 0.5 h. on a water bath give Et 1-benzyl-2-hydroxycyclopentane-2-acetate, b₃ 152 - 5°, which, sapond. 7 h. with 2N KOH, gives the free acid as a pale yellow viscous oil. Refluxing 17.4 g. V 8 h. with amalgamated Zn in 20% HCl and 10 cc. EtOH with the addn. of 3 cc. concd. HCl after each hr. gives 40% benzylcyclopentane,

b755 230 - 4°, d18 0.9340, nD18 1.5209. Redn. of 52.5 g. V in 70 cc. **dioxane** with 2 g. Cu chromite catalyst 4 h. at 160° and 155 atm. initial pressure gives 49.3 g. 1-benzyl-2-cyclopentanol, b14 195-8°. Adding dropwise 116 g. 1-carbethoxy-2-cyclopentanone to 17 g. Na in 300 cc. **xylene**, then adding 136 g. PhCH:CHCH2Br, and refluxing the mixt. 10 h. give 60% 1-carbethoxy-1-cinnamyl-2-cyclopentanone (VI), b3 178-81°, d20 1.0896, nD20 1.5411 (semicarbazone, m. 129°). Heating VI with 25% HCl 10 h., extg. the mixt. with ether, refluxing the residue of the ether 1 h. with NaOH, extg. again with ether, and distg. the residue of the ext. give 30-40% 1-cinnamyl-2-cyclopentanone, b4 142-4°, d20 1.0417, nD20 1.5578, which is also obtained in 30% yield when 12 g. cinnamyladipic acid (VII) is heated with 0.5 g. Ba(OH)2 slowly to 300° [semicarbazone, m. 196° (decompn.)]. Boiling 11 g. VI with 20% NaOH gives 94% VII, m. 99°. Treating 34 g. Et 2-cyclopentanone-1-acetate (VIII) with PhCH2MgBr from 68 g. PhCH2Br, decomp. the mixt. with H2SO4, extg. with ether, and heating the residue of the ext. at 200°/4 mm. give 2.3 g. (Ph-CH2)2, b4 128-9°, m. 51-2°. The distn. residue is taken up in ether and 2N NaOH and the residue of the ether soln. crystd., giving 60% 1-(β-hydroxy-β,β-dibenzylethyl)-2-hydroxy-2-benzylcyclopentane, m. 152-3°. Treating 34 g. VIII with PhCH2MgBr from 34 g. PhCH2Br with ice-cooling, and keeping the mixt. 2 h. at 20° give 23% Et (2-hydroxy-2-benzylcyclo-1-pentyl)acetate, b3 210-16°, which, sapond. with alc. KOH, gives the lactone, CH2.CH2.CH2.C(CH2 Ph).CH.CH2CO.O (IX), m. 78-9°. Converting IX with a large excess of 2N NaOH into the Na salt and treating it with Me2SO4 give 65% (2-methoxy-2-benzylcyclo-1-pentenyl)-acetic acid, m. 74-5°. Adding 120 g. EtNO2 in 220 cc. abs. EtOH with stirring at 0° to 170 g. caprolactam in 250 cc. abs. EtOH and 670 g. 40% alc. HBr, heating the mixt. to 60° after the gas evolution has ceased, distg. off the EtOH as far as possible, taking up the residue with ether, and fractionating the residue of the washed (Na2S2O3) ether ext. give 30 g. CH2Br(CH2)4CO2Et, b14 122-30°, which, refluxed 16 h. with the K salt of I, gives 45% Et ω-(1-carbethoxy - 2 - oxo - 1 - cyclopentyl)caproate, b7 192-3°, d20 1.0505, nD25 1.4587 (semicarbazone, m. 109°). Adding 21.4 g. PhCH2NH2 at 0° to 31.2 g. I in 50 cc. **C6H6**, warming the mixt. to 40°, and filtering it give almost 100% Et 2-hydroxy-2-benzylaminocyclopentane-1-carboxylate, needles, m. 56-7°, which (26.3 g.), heated in 50 cc. **C6H6** at 70-1° or kept in a desiccator over CaCl2 10 days in an icebox, gives almost 100% Et 2-benzylamino-1-cyclopentene-1-carboxylate, m. 26-7°.

IT 1746-03-8, Phosphonic acid, vinyl-
(esters)

RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)
IT **1746-03-8**, Phosphonic acid, vinyl-
(esters)

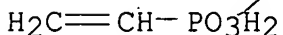
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L47 ANSWER 1 OF 7 HCA COPYRIGHT 2006 ACS on STN
140:321931 Phosphonic acid-modified micro gel dispersion.. Mueller,
Horst (Bollig & Kemper G.m.b.H. & Co. K.-G., Germany). Ger. Offen.
DE 10247847 A1 20040422, 13 pp. (German). CODEN: GWXXBX.
APPLICATION: DE 2002-10247847 20021014.

AB The microgels dispersion are prepd. by polymg. monounsaturated or
polyunsaturated hydroxyl- and carboxy-group-containing acrylic monomers in
the presence of phosphonic acid derivs. (e.g., reaction products of
alkylphosphonic acids with epoxides or vinylphosphonic acid) in the
absence of an emulsifier in an aq. medium with subsequent
crosslinking with aminoplast (e.g., melamine **resin**), and
emulsion **radical polymn.** with hydroxyl-containing
monomer and are used as a base coat in automotive finishes to
enhance a metallic effect and adhesion to plastic.

IT **1746-03-8DP**, Vinylphosphonic acid, acrylic polymers
(aminoplast-crosslinked acrylic micro gel aq. dispersion,
modified with phosphonic acid derivs., used as a base coat in
automotive finishes)

RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C08F283-00
ICS C08F230-02; C08F220-00; C08F216-00; C08G014-10; C08F289-00

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 42

IT 79-10-7DP, Acrylic acid, esters, polymers with phosphonic acid
1746-03-8DP, Vinylphosphonic acid, acrylic polymers
13598-36-2DP, Phosphonic acid, alkyl derivs., reaction products with
epoxides and hydroxyl-containing polyacrylates
(aminoplast-crosslinked acrylic micro gel aq. dispersion,
modified with phosphonic acid derivs., used as a base coat in
automotive finishes)

L47 ANSWER 2 OF 7 HCA COPYRIGHT 2006 ACS on STN

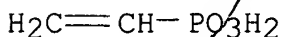
139:367613 Proton-conducting graft copolymers of vinylphosphonic acid derivatives and vinylsulfonic acid derivatives as fuel cell separators. Kiefer, Joachim; Uensal, Oemer (Celanese Ventures G.m.b.H., Germany; Pemeas GmbH). PCT Int. Appl. WO 2003096464 A2 **20031120**, 44 pp. DESIGNATED STATES: W: BR, CA, CN, JP, KR, MX, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2003-EP4913 20030512. PRIORITY: DE 2002-10220817 20020510.

AB Proton-conducting polymer electrolyte membranes for fuel cells are based on monomers and polymers of vinylphosphonic acid monomers and vinylsulfonic acid monomers, which are **polymd.** by **radical polymn.** and then cast as a flat membrane and then dried. The vinylphosphonic acid monomers and polymers have general structures: (1) $(CH_2=CH)y-R-(PO_3Z_2)x$, (2) $CH_2=C[-R-(PO_3Z_2)x]_2$, and (3) $CH_2=C(A)-R-(PO_3Z_2)x$; the vinylsulfonic acid monomers and polymers have similar structures, in which the PO_3Z_2 groups are replaced with SO_3Z groups. In these structures, R = C1-15-alkylene or oxyalkylene, ethyleneoxy, or C5-20-arylene; Z = H, C1-15-alkyl or alkoxy, hydroxyethyl, or C5-20-aryl; x = 1-10, yr = 1-10; and A = CO_2R_2 , CN, $CONR_2$, OR_2 , or R_2 (R_2 = H, C1-15-alkyl or alkoxy, hydroxyethylene, or C5-20-aryl). The inventive membrane is particularly suitable as a polymer electrolyte membrane (PEM) in PEM fuel cells.

IT **1746-03-8D**, Vinylphosphonic acid, derivs., polymer with vinylsulfonic acids
(membranes; proton-conducting graft copolymers of vinylphosphonic acid derivs. and vinylsulfonic acid derivs. as fuel cell separators)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM H01M008-10

ICS B01D071-28; B01D067-00; B01D071-32; B01D071-78; B01D069-12; B01D069-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT **Polymerization**

(graft, **radical**; proton-conducting graft **copolymers** of vinylphosphonic acid derivs. and vinylsulfonic acid derivs. as fuel cell separators)

IT 1184-84-5D, Vinylsulfonic acid, derivs., polymer with vinylphosphonic acids **1746-03-8D**, Vinylphosphonic acid, derivs., polymer with vinylsulfonic acids 13598-36-2D, Phosphonic

acid, vinyl derivs., polymers with vinylsulfonic acid derivs.
 (membranes; proton-conducting graft copolymers of vinylphosphonic
 acid derivs. and vinylsulfonic acid derivs. as fuel cell
 separators)

L47 ANSWER 3 OF 7 HCA COPYRIGHT 2006 ACS on STN

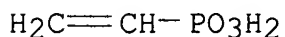
139:192919 Preparation of acryloyldimethyltaurate polymers as adjuvants
 in pesticide formulations. Walter, Michael Marcus; Morschhaeuser,
 Roman; Zerrer, Ralf (Clariant G.m.b.H., Germany). PCT Int. Appl. WO
 2003067981 A1 **20030821**, 43 pp. DESIGNATED STATES: W: BR,
 CA, MX, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT,
 LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO
 2003-EP1272 20030210. PRIORITY: DE 2002-10206468 20020216.

AB The invention relates to pesticide formulation adjuvants contg. at
 least one **copolymer**, obtained by **radical**
copolymn. of (A) acryloyldimethyltaurine acid and/or
 acryloyldimethyltaurates, (B) optionally, one or more other
 olefinically-unsatd., noncationic comonomers, (C) optionally one or
 more olefinically-unsatd., cationic comonomers, (D) optionally one
 or more components contg. silicon, (E) optionally one or more
 components contg. fluorine, (F) optionally one or more
 macromonomers, (G) whereby the copolymn. occurs optionally in the
 presence of at least one polymer additive, (H) under the proviso
 that component (A) is copolymd. with at least one component selected
 from one of the groups (D) to (G).

IT **1746-03-8DP**, Vinylphosphonic acid, polymers with fatty alc.
 derivs. of (meth)acrylic and unsatd. monomers
 (prepn. as adjuvant in pesticide formulations)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM A01N025-10

ICS A01N025-30

CC 5-3 (Agrochemical Bioregulators)

Section cross-reference(s): 38

IT 79-06-1DP, Acrylamide, polymers with fatty alc. derivs. of
 (meth)acrylic and unsatd. monomers 88-12-0DP, polymers with fatty
 alc. derivs. of (meth)acrylic and unsatd. monomers 96-05-9DP,
 Allyl methacrylate, polymers with fatty alc. derivs. of
 (meth)acrylic and unsatd. monomers 110-26-9DP,
 Methylenebisacrylamide, polymers with fatty alc. derivs. of
 (meth)acrylic and unsatd. monomers 868-77-9DP, 2-Hydroxyethyl
 methacrylate, polymers with fatty alc. derivs. of (meth)acrylic and
 unsatd. monomers 1338-43-8DP, Span 80, polymers with fatty alc.
 derivs. of (meth)acrylic and unsatd. monomers **1746-03-8DP**,

Vinylphosphonic acid, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 5039-78-1DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 7398-69-8DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 13162-05-5DP, n-Vinylformamide, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 15214-89-8DP, fatty alc. derivs. of (meth)acrylic and unsatd. monomers 15214-89-8DP, AMPS, polymers with ethoxylated C12-15-alkyl acrylates and itaconates, salts 15625-89-5DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 26403-58-7DP, Polyethylene glycol monoacrylate, C12-15-alkyl ethers, polymers with AMPS, salts 26915-72-0DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 45708-78-9DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 102583-40-4DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 134367-40-1P 190735-24-1DP, Fluowet ac 812, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 214559-58-7DP, C12-15-alkyl ethers, polymers with AMPS, salts 433922-59-9DP, salts 434286-58-5DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 434286-60-9DP, polymers with fatty alc. derivs. of (meth)acrylic and unsatd. monomers 434942-13-9DP, salts 434942-13-9P 582309-44-2DP, salts 582309-45-3DP, salts 582309-46-4DP, salts 582309-47-5DP, salts 582309-48-6DP, salts 582315-49-9DP, salts 582315-50-2DP, salts 582315-52-4DP, salts 583024-29-7DP, salts
(prepn. as adjuvant in pesticide formulations)

L47 ANSWER 4 OF 7 HCA COPYRIGHT 2006 ACS on STN

139:188347 Photosensitive lithographic printing plate material, its manufacture, and aqueous coating solution for the manufacture. Kuroki, Takaaki; Hirabayashi, Kazuhiko (Konica Co., Japan). Jpn. Kokai Tokkyo Koho JP 2003233170 A2 **20030822**, 26 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP/2002-33872 20020212.

AB The printing plate material has an intermediate layer between a substrate and a photopolymerizable layer contg. ethylenically addn.-**polymerizable** compds. and **radical** generators sensitive to actinic energy beam. In manufg. the printing plate, the intermediate layer is formed by coating process, where the layer is heated at the max. plate surface temp. 105-250°. Preferably, the substrate is electrochem. surface-roughened with an acidic medium and then treated with an aq. soln. contg. polyvinylphosphonic acid before formation of the intermediate layer. Also claimed is an aq. coating soln. contg. ethylenically addn.-polymerizable compds., ring-opening polymerizable compds., amino group-contg. compds., or alkoxy group-contg. compds. for formation of the intermediate layer. The obtained printing plate material has high interlayer adhesion, printability, and background

soiling resistance.

IT **27754-99-0**, Polyvinylphosphonic acid
(substrate-treating agent; heat treatment of intermediate layer
in manuf. of photosensitive lithog. printing plate material for
high interlayer adhesion)

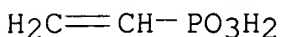
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC ICM G03F007-00

ICS B41N001-14; B41N003-03; B41N003-04; C25D011-16; G03F007-11;
G03F007-38

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

IT **27754-99-0**, Polyvinylphosphonic acid
(substrate-treating agent; heat treatment of intermediate layer
in manuf. of photosensitive lithog. printing plate material for
high interlayer adhesion)

L47 ANSWER 5 OF 7 HCA COPYRIGHT 2006 ACS on STN

128:128353 Synthesis and Characterization of Functionalized
Poly(ϵ -caprolactone) **Copolymers** by Free-

Radical Polymerization. Jin, S.; Gonsalves, K. E.

(Department of Chemistry Polymer Program at the Institute of
Materials Science, University of Connecticut, Storrs, CT, 06269,
USA). Macromolecules, 31(4), 1010-1015 (English) **1998**.

CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical
Society.

AB A series of functionalized poly(ϵ -caprolactone) copolymers,
poly(ϵ -caprolactone-co-vinylphosphonic acid) and
poly(ϵ -caprolactone-co-dimethyl vinylphosphonate), were
synthesized by the free-radical copolymerization of
2-methylene-1,3-dioxepane with two vinyl monomers, vinylphosphonic
acid and di-Me vinylphosphonate. The copolymers have ester groups
in the backbone as well as pendent functional groups. The structure
of each copolymer was established by ¹H- and ¹³C-NMR and IR
spectroscopy. Differential scanning calorimetry indicates that the
copolymer has a random structure. NMR study showed H transfer
during the copolymerization. The copolymers have different soly. behavior
due to the presence of different pendent functional groups.

IT **27754-99-0P**, Vinylphosphonic acid homopolymer

(synthesis and characterization of functionalized
poly(ϵ -caprolactone) **copolymers** by free-
radical polymn.)

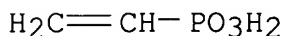
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



CC 35-7 (Chemistry of Synthetic High Polymers)

ST caprolactone vinylphosphonic **polymer** free **radical**
prepn

IT IR spectra

(Fourier-transform; synthesis and characterization of
functionalized poly(ϵ -caprolactone) **copolymers**
by free-**radical polymn.**)

IT **Polymerization**

Polymerization

(**radical**, ring-opening; synthesis and characterization
of functionalized poly(ϵ -caprolactone) **copolymers**
by free-**radical polymn.**)

IT Polymer chains

(sequence distribution; synthesis and characterization of
functionalized poly(ϵ -caprolactone) **copolymers**
by free-**radical polymn.**)

IT Hydrolysis

(stability; synthesis and characterization of functionalized
poly(ϵ -caprolactone) **copolymers** by free-
radical polymn.)

IT NMR (nuclear magnetic resonance)

Solubility

(synthesis and characterization of functionalized
poly(ϵ -caprolactone) **copolymers** by free-
radical polymn.)

IT Polyesters, preparation

(vinylphosphonic-modified; synthesis and characterization of
functionalized poly(ϵ -caprolactone) **copolymers**
by free-**radical polymn.**)

IT **27754-99-0P**, Vinylphosphonic acid homopolymer 37953-82-5P,

Dimethyl vinylphosphonate homopolymer 83952-55-0P,

2-Methylene-1,3-dioxepane homopolymer 188884-72-2P,

2-Methylene-1,3-dioxepane-vinylphosphonic acid copolymer

188884-74-4P, Dimethyl vinylphosphonate-2-methylene-1,3-dioxepane

copolymer

(synthesis and characterization of functionalized
poly(ϵ -caprolactone) **copolymers** by free-
radical polymn.)

L47 ANSWER 6 OF 7 HCA COPYRIGHT 2006 ACS on STN

82:4964 Copolymers containing phosphorus and chlorine. Levin, Ya. A.;
Romanov, V. G.; Ivanov, B. E. (Arbuzov, A. E., Institute of Organic
and Physical Chemistry). U.S.S.R. SU 431180 **19740605**
From: Otkrytiya, Izobret., Prom. Obrazttsy, Tovarnye Znaki, 1974,
51(21), 87. (Russian). CODEN: URXXAF. APPLICATION: SU
1973-1868705 19730105.

AB Fire-resistant polyelectrolytes were prep'd. by the **radical**
copolymn. of vinyl comp'd. with a comp'd. contg. P and Cl,
e.g. a mixt. of vinylphosphonic acid [**1746-03-8**] and
mono(2-chloroethyl) vinylphosphonate [7283-65-0].

IT **1746-03-8D**, Phosphonic acid, ethenyl-, polymer with
mono(2-chloroethyl) vinylphosphonate and vinyl comp'ds.
(polyelectrolytes, fire-resistant)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC C08F

CC 36-3 (Plastics Manufacture and Processing)

IT **1746-03-8D**, Phosphonic acid, ethenyl-, polymer with
mono(2-chloroethyl) vinylphosphonate and vinyl comp'ds.
(polyelectrolytes, fire-resistant)

L47 ANSWER 7 OF 7 HCA COPYRIGHT 2006 ACS on STN

60:39088 Original Reference No. 60:6933f-g Carbon chain polymers and
copolymers. LII. Relative activities of esters of vinylphosphonic
acid in copolymerization with styrene. Kolesnikov, G. S.;
Rodionova, E. F.; Safaraliev, I. G. (Inst. Heteroorg. Compds.,
Moscow). Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (11),
2028-31 (Unavailable) **1963**. CODEN: IASKA6. ISSN:
0002-3353.

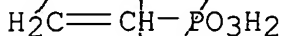
AB cf. CA 54, 7214a; 58, 14108f; 59, 761d; Pike and Cohen, CA 54,
23410g. The following relative rate consts. (r_1 is ester) were
dtd. for copolymerization of indicated esters of $\text{CH}_2:\text{CHPO}(\text{OH})_2$ with
 $\text{PhCH}:\text{CH}_2$ at 60° in the presence of 0.2% $(:\text{NCMe}_2\text{CN})_2$ (the
ester radical, r_1 , and r_2 given): Me, 0.4, 4.61; Et, 0, 4.1; iso-Pr,
0, 2.39; Pr, 0.9, 4.24; iso-Bu, 0.5, 4.4; Bu, 0.3, 5.4; Ph, 0, 2.03.
No correlation between the nature of the ester **radical** and
polymerizability was found. The low order of reactivity of
these esters and the low mol. wts. of their homopolymers indicated

that during the polymerization a chain transfer occurs much more readily than is the case with many other vinyl monomers.

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, polymerization of, with styrene, and relative reactivity therein)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 45 (Synthetic High Polymers)

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, polymerization of, with styrene, and relative reactivity therein)

=> D HIS L49-

FILE 'HCA' ENTERED AT 20:04:59 ON 17 NOV 2006

L49 9 S L48 AND L12

L50 19 S L48 NOT L49

=> D L49 1-9 CBIB ABS HITSTR HITIND

L49 ANSWER 1 OF 9 HCA COPYRIGHT 2006 ACS on STN

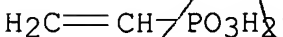
141:260890 Process for production of vinylphosphonic acids and silyl esters thereof. Koola, Johnson D. (Rhodia Inc., USA). U.S. Pat. Appl. Publ. US 2004186315 A1 20040923, 6 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-393312 20030319.

AB A process for prepg. vinylphosphonic acid compds. and silyl esters thereof in which a bis(haloalkyl) vinylphosphonate is reacted with an organosilyl halide to produce a silyl ester which can then be converted to the acid by reaction with a proton donor. Thus, reaction of bis(2-chloroethyl) vinylphosphonate with Me3SiCl in **vacuum** at 145-150° gave bis(silyl) ether in 24h which on hydrolysis with H2O in one hour gave 95% vinylphosphonic acid.

IT **1746-03-8P**, Vinylphosphonic acid
(process for prepn. of vinylphosphonic acids and intermediate silyl esters thereof)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM C07F009-28

INCL 562008000

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT **1746-03-8P**, Vinylphosphonic acid

(process for prepn. of vinylphosphonic acids and intermediate silyl esters thereof)

L49 ANSWER 2 OF 9 HCA COPYRIGHT 2006 ACS on STN

139:74102 Implantable device having substances impregnated therein and a method of impregnating the same. Hossainy, Syed F. A.; Ghio, Jacqueline; Chen, Li (Advanced Cardiovascular Systems, Inc., USA). U.S. US 6585765 B1 **20030701**, 17 pp. (English). CODEN: USXXAM. APPLICATION: US 2000-608444 20000629.

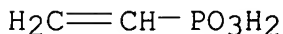
AB The present invention provides a method of impregnating an implantable device, such as a vascular graft or a covering adapted to be disposed over a prosthesis. The therapeutic substances may be impregnated within the implantable device as a passive coating or as a delivery matrix for a therapeutic substance. Also provided is an implantable device having such substances impregnated therein. For example, a PTFE vascular graft was impregnated with org.-sol. heparin. Org.-sol. heparin (5%) was dissolved in Freon and the soln. was permeated through the circumferential area of the graft by flushing the inner lumen twice with the heparin soln. using a syringe. A mandrel was selected such that it snugly fit within the bore of the graft. The mandrel was placed within the bore of the graft, and the graft was dried in a **vacuum** oven at 60° for about 12 h. The org.-sol. heparin remained within the interstices of the graft.

IT **1746-03-8**, Vinylphosphonic acid

(prepolymer crosslinking with; polymeric implantable devices with impregnated therapeutic substances)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC ICM A61F002-06

ICS A61L029-00

INCL 623001450; 623066000; 427002240

CC 63-7 (Pharmaceuticals)

IT 79-06-1, Acrylamide, reactions 79-10-7, Acrylic acid, reactions

79-41-4, Methacrylic acid, reactions 88-12-0, reactions

107-73-3, Phosphorylcholine 868-77-9 1337-81-1, Vinylpyridine

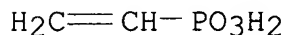
1746-03-8, Vinylphosphonic acid 2867-47-2, Dimethyl

aminoethyl methacrylate

(prepolymer crosslinking with; polymeric implantable devices with

impregnated therapeutic substances)

- L49 ANSWER 3 OF 9 HCA COPYRIGHT 2006 ACS on STN
 124:203954 Silyl phosphonates as stabilizing agents for polydiorganosiloxanes. Graiver, Daniel; Hough, Eric J.; Lomas, Arnold W. (Dow Corning Corporation, USA). U.S. US 5481014 A **19960102**, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1995-438586 19950508.
- AB Alkali metal-contg. polydiorganosiloxanes are stabilized by title phosphonates $R_1a(OH)b(OSiR_2)_3-a-bPO$ ($R_1, R_2 = C<12$ hydrocarbyl; $a = 1-2$, $b = 0-1$, and $a + b = 1-2$) showing higher shelf life than silyl phosphates when dilg. in cyclopolysiloxanes. A neutralized dimethylvinylsilyl-terminated polydimethylsiloxane gum contg. 18-20 ppm K was mixed with 0.28% (based on the gum) mixt. of 1 g bis(trimethylsilyl)vinyl phosphonate (from vinylphosphonic acid and HMDS) and 49 g octamethyltetracyclosiloxane at 35 rpm and 250° under **vacuum** for 0.5 h to form a gum showing 10% wt. loss at 450°, vs. 310°, without the treatment.
- IT **1746-03-8**, Vinylphosphonic acid
 (silyl phosphonate stabilizers for alkali metal-contg. siloxanes)
- RN 1746-03-8 HCA
- CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



- IC ICM C07F007-08
 INCL 556401000
 CC 37-6 (Plastics Manufacture and Processing)
 IT 107-46-0, HMDS **1746-03-8**, Vinylphosphonic acid
 (silyl phosphonate stabilizers for alkali metal-contg. siloxanes)
- L49 ANSWER 4 OF 9 HCA COPYRIGHT 2006 ACS on STN
 102:62692 Hydrophilic crosslinked copolymers and their use. Engelhardt, Friedrich; Kuehlein, Klaus; Balzer, Julianne; Duersch, Walter; Kleiner, Hans Jerg (Cassella A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3314569 A1 **19841025**, 37 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1983-3314569 19830422.
- AB Polymers in which crosslinking occurs via nonlinear polyphosphate groups are prep'd. by polyng. vinyl compds. in the presence of monomers such as $RO(CH_2:CH)P(O)O[(CH_2:CH)P(O)O]_mP(O)(CH:CH_2)OR_1$ (I ; $R, R_2 = H$ or $C1-4$ alkyl; $m = 0-6$) and are useful as acid-sol. coatings and encapsulating materials. Thus, a soln. of acrylamide 97.2, 2-acrylamido-2-methyl-1-propanesulfonic acid 9.7, vinylsulfonic acid 2.0, and I ($R, R_1 = H, m = 0$) 0.5 g in 105 mL water was adjusted to pH 8.5 with 25% NH_4OH and added to a soln. of 7.2 g Arkopal N 100 (ethoxylated nonylphenol deriv. emulsifier) and 19.4 g Span 80 in Isopar M (isoparaffin, b.p. 200-240°). The

reaction vessel was **evacuated** and filled with N before adding a soln. of 0.0275 g (NH₄)₂S₂O₈ to the above mixt. which was then heated for 1.5 h at 30-40° to give a stable copolymer [94558-32-4] emulsion which could be inverted in water to form a highly viscous, thixotropic compn.

IT **1746-03-8DP**, polyanhydride derivs., polymers with acrylamide and acrylamidomethylproanesulfonic acid
(manuf. of crosslinked)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IC C08F230-02; C08F220-56; C09D003-727; A61F013-16; A61K007-00

CC 35-4 (Chemistry of Synthetic High Polymers)

IT 79-06-1DP, polymers with acrylamidomethylproanesulfonic acid and vinylphosphonic acid polyanhydride **1746-03-8DP**, polyanhydride derivs., polymers with acrylamide and acrylamidomethylproanesulfonic acid 15214-89-8DP, polymers with acrylamide and vinylphosphonic acid polyanhydrides 94558-29-9P 94558-30-2P 94558-31-3P 94558-32-4P 94558-33-5P 94558-34-6P 94558-35-7P 94558-36-8P 94588-45-1P
(manuf. of crosslinked)

L49 ANSWER 5 OF 9 HCA COPYRIGHT 2006 ACS on STN

84:24422 Printing plates. Uhlig, Fritz (Farbwerke Hoechst A.-G., Fed. Rep. Ger.). Ger. Offen. DE 2340323 **19750220**, 21 pp.
(German). CODEN: GWXXBX. APPLICATION: DE 1973-2340323 19730809.

AB Nonlight-sensitive printing plates which need no development carry on their surface a nonlight-sensitive coating of a polymer whose hydrophilicity is changed on exposure to an electron beam. The plates, because of their nonlight sensitivity, have an almost unlimited storage stability. Thus, an Al roll was roughened and anodized, coated with a 5% aq. soln. of poly(vinylpyrrolidone), and dried. This roll was then imagewise exposed to an intermediate electron beam of 10-15 kV in a high **vacuum** (.apprx.10⁻⁵ torr) with a deflection speed of 5 sec/2 cm path length. Immediately after exposure the plate was used in printing.

IT **27754-99-0**
(printing plates with nonphotosensitive coatings of, for electron beam-imaging)

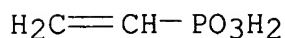
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

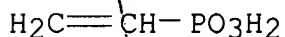
CMF C2 H5 O3 P



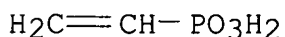
IC G03F
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic Processes)
IT 50-70-4 50-99-7, uses and miscellaneous 57-50-1, uses and miscellaneous 63-42-3 69-79-4 548-62-9 1318-23-6 9000-01-5 9002-89-5 9003-01-4 9003-39-8 9004-34-6, uses and miscellaneous 9004-53-9 9005-25-8, uses and miscellaneous 25038-59-9, uses and miscellaneous 25322-68-3 **27754-99-0**
(printing plates with nonphotosensitive coatings of, for electron beam-imaging)

L49 ANSWER 6 OF 9 HCA COPYRIGHT 2006 ACS on STN
71:39081 Synthesis of alkyl esters of vinylphosphonic acid. Rogacheva, I. A.; Gefter, E. L. (USSR). Zhurnal Obshchei Khimii, 39(3), 608 (Russian) **1969**. CODEN: ZOKHA4. ISSN: 0044-460X.
AB In reaction of $\text{CH}_2:\text{CHPOCl}_2$ with dry alcs. in the absence of HCl acceptors at -30 to -50° the catalytic action of HCl is considerably suppressed and the rupture of alkoxy groups by HCl is greatly reduced. The reaction run in air or inert gas or in **vacuo** gave the same results and no addn. of HCl to the double bond took place. Removal in **vacuo** of most of the resulting HCl with excess ROH and neutralization of the residue with dry Na_2CO_3 gave 75-82% $\text{CH}_2:\text{CHP}(\text{O})(\text{OR})_2$.

IT **1746-03-8**
(esterification of, alkyl esters by)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



IT **1746-03-8DP**, Phosphonic acid, vinyl-, alkyl esters
(prepn. of)
RN 1746-03-8 HCA
CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 29 (Organometallic and Organometalloidal Compounds)
IT **1746-03-8**
(esterification of, alkyl esters by)
IT **1746-03-8DP**, Phosphonic acid, vinyl-, alkyl esters

(prepn. of)

L49 ANSWER 7 OF 9 HCA COPYRIGHT 2006 ACS on STN

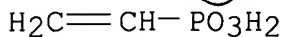
54:28234 Original Reference No. 54:5466d-e Vinylphosphonic acid.
Schimmelschmidt, Kurt; Denk, Walter (Farberke Hoechst AG vorm.
Meister Lucius & Bruning).. DE 1023033 **19580123**
(Unavailable). APPLICATION: DE .

AB H₂O (36 g.) was added dropwise with vigorous stirring at
10-20° to 145 g. CH₂:CHP(O)Cl₂ in 400 cc. CH₂Cl₂, the mixt.
stirred 4 hrs. at 20°, the layers sepd., and the resulting
crude vinylphosphonic acid distd. in **vacuo**, d₂₀ 1.398,
n_D 1.4710, useful as a flameproofing agent and as intermediate.
Cf. following abstr.

IT **1746-03-8**, Phosphonic acid, vinyl-
(manuf. of)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



INCL 120

CC 10B (Organic Chemistry: Aliphatic Compounds)

IT **1746-03-8**, Phosphonic acid, vinyl-
(manuf. of)

L49 ANSWER 8 OF 9 HCA COPYRIGHT 2006 ACS on STN

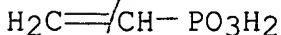
51:56853 Original Reference No. 51:10559f-h Calcium salt of
hydroxymethylphosphonic acid. (Aktien Gesellschaft). CH 311982
19560215 (Unavailable). APPLICATION: CH .

AB The prepn. of Ca (hydroxymethyl)phosphinate is accomplished by
treating 2.5 kg. 80% hypophosphorous acid with 0.95 kg.
trioxymethylene at 40-5° in an N atm. accompanied by const.
stirring. The temp. is permitted to rise to 55-60° and the
reaction continued at this temp. a no. of hrs. The clear,
colorless, sirupy product is concd. in **vacuo** in the
presence of excess CH₂O and the acid is dild. and neutralized with
CaCO₃. After filtration through C, the soln. is again concd. in
vacuo and a white, cryst. powder is obtained.

IT **1746-03-8**, Phosphonic acid, vinyl-
(esters, metal salts)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



INCL 116H

CC 10 (Organic Chemistry)
 IT **1746-03-8**, Phosphonic acid, vinyl-
 (esters, metal salts)

L49 ANSWER 9 OF 9 HCA COPYRIGHT 2006 ACS on STN

49:60196 Original Reference No. 49:11540f-i Organometallic and organometalloidal fluorine compounds. X. Trifluoromethyl-phosphonous and -phosphonic acids. Bennett, F. W.; Emeleus, H. J.; Haszeldine, R. N. (Univ. Cambridge, UK). Journal of the Chemical Society 3598-3603 (Unavailable) **1954**. CODEN: JCSOA9. ISSN: 0368-1769.

AB cf. C.A. 49, 1542c. CF_3PI_2 (I) is kept in a **vacuum** at 20° with H_2O until the mixt. becomes homogeneous and is then treated dropwise with unstabilized H_2O_2 . Pptd. iodine is filtered off and the soln. evapd. by freeze-drying to give hygroscopic $\text{F}_3\text{CPO}(\text{OH})_2$ (II), m. $81-2^\circ$. II can be obtained by similar reactions from $(\text{CF}_3)_2\text{PI}$ (III), CF_3PCl_2 (IV), $(\text{CF}_3)_2\text{PCl}$, or CF_3PH_2 . For II, K_1 is $6.8 \pm 1.2 \times 10^{-2}$, K_2 is $1.2 \pm 0.1 \times 10^{-4}$. For $\text{MePO}(\text{OH})_2$ K_1 is 3.3×10^{-3} , K_2 is 4.6×10^{-8} . II forms a mono- (V) and di-Na salt (VI). The di- NH_4 salt m. $212-16^\circ$ (decompn.); the Ba salt is hydrated. No ppt. results when II is treated with Pb, As, HgI , or Ca salts. II is best characterized by the infrared spectra of V and VI. $(\text{CF}_3)_3\text{P}$ and NaOH (or hydrolysis of III and IV) give $\text{F}_3\text{CPH}(\text{O})\text{OH}$ (VII) which cannot be isolated since it is volatile with H_2O vapor at **low pressure**. Aq. hydrolysis of I gives some VII, but the reaction is complex. VII forms a mono-Na salt which is oxidized by HNO_3 to V. Its infrared spectrum indicates that it is best represented by $\text{CF}_3\text{PH}(\text{O})\text{ONa}$. During aq. hydrolysis VII gives CHF_3 .

IT **1746-03-8**, Phosphonic acid, vinyl-
 (derivs.)

RN 1746-03-8 HCA

CN Phosphonic acid, ethenyl- (9CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT **1746-03-8**, Phosphonic acid, vinyl-
 (derivs.)

=> D L50 1-19 TI

L50 ANSWER 1 OF 19 HCA COPYRIGHT 2006 ACS on STN

TI Preparation of covalently bonded cation exchange chromatographic column

- L50 ANSWER 2 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Removal of thiocarbonyl end groups of polymers
- L50 ANSWER 3 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Method of treating mine drainage
- L50 ANSWER 4 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Cosmetic sunscreens comprising an organic UV-A filter and method for displacing the maximum absorption wavelength
- L50 ANSWER 5 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Photopolymerizable material with storage stability for lithographic plate
- L50 ANSWER 6 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Emulsion for post-treatment of electrophotographically prepared lithographic plates and preparation of lithographic plates
- L50 ANSWER 7 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Electrochemical treatment of aluminum in a nonaqueous polymeric polybasic organic acid containing electrolytes
- L50 ANSWER 8 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Anodic oxidation of aluminum and its use as printing plate substrate
- L50 ANSWER 9 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Electrophotographic resist materials
- L50 ANSWER 10 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Preserving lithographic printing forms
- L50 ANSWER 11 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Photographic film unit for preparing color transfer images
- L50 ANSWER 12 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI O,O-Dialkyl (1-hydroxy-2-nitroethyl)phosphonates
- L50 ANSWER 13 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Photosensitive printing plate
- L50 ANSWER 14 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Lubricant additives
- L50 ANSWER 15 OF 19 HCA COPYRIGHT 2006 ACS on STN
TI Flame retardant polyester
- L50 ANSWER 16 OF 19 HCA COPYRIGHT 2006 ACS on STN

- TI Carbochain polymers and copolymers. XV. Synthesis and polymerization of the esters of vinylphosphinic acid
- L50 ANSWER 17 OF 19 HCA COPYRIGHT 2006 ACS on STN
- TI Carbon chain polymers and copolymers. XI. Synthesis, polymerization and copolymerization of esters of vinylphosphinic acid
- L50 ANSWER 18 OF 19 HCA COPYRIGHT 2006 ACS on STN
- TI Flameproofing of wood, paper, and textiles
- L50 ANSWER 19 OF 19 HCA COPYRIGHT 2006 ACS on STN
- TI Phosphoorganic compounds. V. Esters of ethylenephosphonic acid

=> D L50 5,6,9,10,13 CBIB ABS HITSTR HITIND

- L50 ANSWER 5 OF 19 HCA COPYRIGHT 2006 ACS on STN
- 122:303062 Photopolymerizable material with storage stability for lithographic plate. Mibuka, Nobuko; Imahashi, Satoshi (Toyo Boseki, Japan). Jpn. Kokai Tokkyo Koho JP 07028250 A2 **19950131** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-174347 19930714.
- AB In the material consisting of a substrate coated with a photopolymerizable layer and a radiation-transmitting and O-intercepting protective layer, the protective layer contains an org. polymer sol. to water and **org. solvent** -water mixt. and a polymer contg. phosphonate or phosphinate groups in the side chains. The compn. shows high storage stability under high-temp. and -moisture condition.
- IT **27754-99-0**, Poly(vinyl phosphonate)
(photopolymerizable material having protective layer for storage stability for lithog. plate)
- RN 27754-99-0 HCA
- CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



- IC ICM G03F007-11
ICS G03F007-00
- CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

No
Semiconductor
Substrate

IT 27754-99-0, Poly(vinyl phosphonate) 28806-77-1, Poly(vinyl phosphinate) 105304-08-3, Poly[(p-styrylmethyl)phenyl phosphinate] (photopolymerizable material having protective layer for storage stability for lithog. plate)

L50 ANSWER 6 OF 19 HCA COPYRIGHT 2006 ACS on STN

108:229686 Emulsion for post-treatment of electrophotographically prepared lithographic plates and preparation of lithographic plates. Schell, Loni (Hoechst A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3617077 A1 **19871126**, 5 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1986-3617077 19860521.

AB An emulsion for post-treating electrophotog. prepd. lithog. plates for improving print quality is described. The emulsion consists of 25-60 wt.% of an aq. phase contg. a phosphonic acid compd. and a water-sol. hydrophilic polymer, and 40-75 wt.% of an **org. solvent** phase that contains a hydrocarbon mixt. and ≥ 20 wt.% of an arom. compd.

IT 27754-99-0, Poly(vinylphosphonic acid) (electrophotog. lithog. plate post-treatment emulsion contg., for improved print quality)

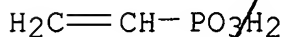
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC ICM G03G013-28

ICS G03G005-10; B41N001-08; B41N003-00

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 6419-19-8, Aminotrismethylenephosphonic acid 9000-01-5, Gum arabic 9014-92-0 **27754-99-0**, Poly(vinylphosphonic acid) (electrophotog. lithog. plate post-treatment emulsion contg., for improved print quality)

L50 ANSWER 9 OF 19 HCA COPYRIGHT 2006 ACS on STN

96:172167 Electrophotographic resist materials. Lind, Erwin (Hoechst A.-G., Fed. Rep. Ger.). Eur. Pat. Appl. EP 43085 A2 **19820106**, 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, FR, GB, IT, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1981-104847 19810623. PRIORITY: DE 1980-3024718 19800630.

AB Metal or metalized plates for photoresists can be coated with an org. photoconductor just prior to use by transfer under heat

(100-180°) and pressure (2-10 bar) from a temporary polyester film support without adverse effects on their electrophotog. properties, including dark discharge. The use of solvents is thereby eliminated. Thus, a 5 μ coating was applied to a 100 μ polyester film as soln. of 2,5-bis(4'-diethylaminophenyl)-1,3,4-oxadiazole 20, a styrene-maleic anhydride copolymer 20, and Rhodamine B Extra 0.05 g in a mixt. of BuOAc 50 and HOC2H4OMe 200 mL, followed by evapn. The film was passed in contact with a Cu-laminated plastic plate at 0.5 m/min, 10 bar, and 170° between an elec. heated roller and a polytetrafluoroethylene-coated counter roller. Stripping of the polyester film left the photoconductor strongly bound to the Cu surface. For prepn. of a printed circuit, the photoconductor was given a -400 V charge, exposed through a mask to a 100-W lamp at 65 cm for 10 s, developed with a bitumen toner, the background areas removed by softening 60 s in a soln. of Na2SiO3.9H2O 50 g in a mixt. of glycerol (86%) 250, ethylene glycol 390, and MeOH 310 g, spraying and wiping with water, followed by etching of the Cu pattern, and removal of the toner cover with an **org. solvent**.

IT **27754-99-0**

(aluminum plate treated with, in prepn. of elec. printed circuits with electrophotog. resist material)

RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P

$\text{H}_2\text{C}=\text{CH}-\text{PO}_3\text{H}_2$

IC G03G005-05; G03G005-14; G03G013-26

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT **27754-99-0**

(aluminum plate treated with, in prepn. of elec. printed circuits with electrophotog. resist material)

L50 ANSWER 10 OF 19 HCA COPYRIGHT 2006 ACS on STN

95:159903 Preserving lithographic printing forms. Schell, Loni (Hoechst A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3006094 **19810820**, 18 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1980-3006094 19800219.

AB Lithog. Al plates carrying a relief obtained by a diazo, azide, photopolymer, or electrophotog. process, ready to print, are protected against oleophilic contamination, by hydrophilizing

organophosphonic acids applied as 0.1-5% aq. soln. with 5-35% of a water-sol. org. polymer (gum arabic, dextrin, poly(vinyl alc.)) by wiping, immersion, or spraying. Thus, an electrostatic latent image was formed on a roughened anodized Al plate sensitized with a 5 g/m² oxazole deriv.-polymer layer, developed with a C-polymer toner powder, the toner image fixed at 170-180°, the photoconductor coating removed with an aq.-**org. solvent** mixt., and the plate coated with a soln. contg. tapioca dextrin 10, glycerol 1, H₃PO₄ (85%) 0.3, Na octylsulfate 2.5, and poly(vinylphosphonic acid) 0.5 part in H₂O 85.7 parts. The plate yielded clear prints, unaffected by fingerprint contamination.

IT **27754-99-0**

(potato, lithog. printing plate protection layer contg.)

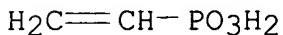
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC B41N003-00

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic Processes)

IT 56-81-5, uses and miscellaneous 142-31-4 9000-01-5 9004-53-9
27754-99-0

(potato, lithog. printing plate protection layer contg.)

L50 ANSWER 13 OF 19 HCA COPYRIGHT 2006 ACS on STN

70:42850 Photosensitive printing plate. (Kalle A.-G.). Brit. GB 1129820
19681009, 5 pp. (English). CODEN: BRXXAA. PRIORITY: DE
19650102.

AB An Al plate is coated with a soln. of a diazonium salt or a diazo resin in aq. HCl or HBr to which an **org. solvent** may be added and to which has been added a multivalent org. acid, esp. poly-(vinylphosphonic acid) (I). The diazonium compd. is pptd. from soln. by addn. of the org. acid and the ppt. is redissolved in HCl and optionally ethylene glycol ether. This enables a stable coating soln. to be prep'd. which contains more I than the solns. of Brit. 1,019,919. Thus, the condensation product from diphenylamine-4-diazonium chloride and CH₂O in 85% H₃PO₄ is pptd. from its 1-30% aq. soln. by addn. of 10% aq. I, using 3 equivs. I to 1 equiv. diazonium. After collection and washing, 1 part of solid is dissolved in 50 parts 5% aq. HCl and coated on a mech. roughened Al plate. After drying 2 min. at 80-120°, the plate may be

stored for several months before use.

IT **27754-99-0**

(lithographic plates from)

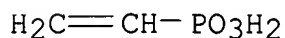
RN 27754-99-0 HCA

CN Phosphonic acid, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8

CMF C2 H5 O3 P



IC G03C

CC 74 (Radiation Chemistry, Photochemistry, and Photographic Processes)

IT 79-10-7 **27754-99-0** 27936-88-5

(lithographic plates from)

=> D HIS L51-

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L51 15 S L3 AND L12

L52 0 S L51 NOT (L45 OR L46 OR L47 OR L49)